DOCUMENT RESUME

ED 043 952	24	EA 003 075

AUTHOR	Austin, Gilbert R.
TITLE	Report on HEW Summer Institute: Researching and Evaluating Outcomes of Educational Innovations in New England.
INSTITUTION	New Hampshire Univ., Durham.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO	BR-8-0528
PUB DATE	68
CONTRACT	OEC-0-8-080528-4478
NOTE	109p.
EDRS PRICE	EDRS Price MF-$0.50 HC-$5.55
DESCRIPTORS	*Communication (Thought Transfer), *Data Processing, Decision Making, *Educational Innovation, Educational Research, Evaluation, *Institutes (Training Programs), *Research Methodology, Summer Institutes

ABSTRACT

This report discusses the goals, procedural format, and outcomes of a summer research training institute conducted by the Bureau of Educational Research and Testing Services at the University of New Hampshire. Trainees at the institute studied (1) the problems inherent in evaluating the particular educational problem with which the trainee was concerned, (2) major alternatives of educational research methodologies, and (3) communications techniques applicable to educational decision making. Each trainee also used modern data processing equipment for encoding and utilizing research data, and read current educational literature related to his own research projects. The report contains institute time schedules, course offerings, book lists, samples of various materials prepared for the institute, and a table depicting participants' progress. (LLR)

BR 8-0528
PA-24

ED043952

REPORT ON HEW SUMMER INSTITUTE

Researching and Evaluating Outcomes of Educational Innovations in New England

Contract Number: 80528

Amount of Grant: $36,124.00

Gilbert R. Austin, Ph.D., Director

Bureau of Educational Research
and Testing Services

University of New Hampshire

1968

EA 003 025

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

REPORT ON THE HEW SUMMER INSTITUTE - 1968

The Bureau of Educational Research and Testing Services, a sub-unit of the Department of Education, University of New Hampshire, conducted a six week research training Institute during the period July 1st to August 9th, 1968. The grant permitted the training of thirty participants from any of the six New England states.

This research training institute was funded by the Department of Health, Education and Welfare Research Training Division. The Institute had as its major purposes the five following goals:

1. The first major theme was the study of the problems inherent in evaluating the particular educational problem with which the trainee is concerned.
2. The second major theme was the study of the major alternatives open to the educator in terms of educational research methodologies; for instance, the experimental approach as typified by the work of Campbell and Stanley, or the context, input, process and production model (CIPP) as presented by Daniel L. Stufflebeam. In either model approach, the program review and evaluation technique (PERT), presently being developed for education by Desmond Cook, will be advocated as the method of organizing.
3. The third major theme was the study of communications techniques applicable to proper implementation of the decision making process at various levels of the educational system.
4. The fourth major theme was the use of modern data processing equipment to facilitate the encoding and utilization of research data.
5. The fifth major theme was the reading of current educational literature

with emphasis on the application of literature relevant to the research project with which the trainee is involved.

Because of the lateness of the funding of this research institute, it was not possible to obtain thirty applicants. Twenty-seven were originally accepted; one withdrew subsequent to the first week.

The participants from the New England states were as follows: Maine - six, Vermont - two, New Hampshire - fourteen, Rhode Island - none, Connecticut - one, and Massachusetts - three.

The Institute's daily instructional schedule went from 8:30 in the morning until 4:00 P. M. and was often augmented by evening sessions and consultation meetings with the principal instructors in the late afternoon. Two faculty members of the University of New Hampshire Bureau of Educational Research and Testing Services were principally responsible for the operation of this institute - Dr. Gilbert R. Austin, Director, and Dr. Albert R. Elwell, Assistant Director. Dr. Austin is a member of the Department of Education and Director of the Bureau of Educational Research and Testing Services at the University of New Hampshire. Dr. Elwell is a member of the Department of Education and Director of Research and Development at the Bureau. Mr. James Estes, an instructor in the Department of Mathematics, conducted the afternoon course in computer programming. The Institute was conducted on a day to day basis in the following manner:

8:30 - 10:00 A.M.	Dr. Austin and Dr. Elwell jointly presented material relative to educational research. This involved instruction in statistics, experimental design and research methodologies.

10:00 - 10:30 A.M.	Participants given a morning break
10:30 - 11:45 A.M.	Dr. Austin and Dr. Elwell continued the morning's presentation and encouraged group discussion with the participants with special reference to the application of this material to their projects.
12:00 - 1:00 P.M.	Lunch
1:00 - 2:30 P.M.	Library research, talk with major professors, or Mr. Estes, or work on own projects.
2:30 - 4:00 P.M.	Met with Mr. Estes and were concerned with how to run a computer and how to write computer programs. This included hands-on operation on both the IBM 1620 and the IBM 360, as well as a remote terminal system for the 360.

Each institutee received six graduate credits for his participation in this six-weeks institute. The course numbers were Education 881: Methods and Techniques of Educational Research. This course was a critical study of the principal methods employed in the investigation of educational problems and an evaluation of the procedures and standards used for reportings and findings; and Education 882: Research Problems in Education. This course was to orient the trainees to the variety of educational research. In the latter portion, each trainee was expected to develop a research proposal which would have practical importance and relevance to his home school district, or to evaluate a project presently being studied.

In all of the above, the instructional staff was involved on a full time basis. Because we were particularly concerned that the program should meet the needs and expectations of the trainees, the program segments were evaluated bi-weekly by the trainees. It became apparent as a result of these evaluations that certain changes needed to be made in the subject-content and instructional sequence of the Institute, and the methods by which they were to be implemented. A copy of these evaluation forms will be found in the appendix of this report. One of the basic statements in the original proposal for this institute was that it should be team taught. The staff attempted to do this, to the degree that it was possible, and to interact among themselves and with the enrollees. It is the opinion of the author that this was more successfully done this year than in the 1967 Summer Institute.

In addition to the questionnaire handed out each two weeks, the institutees were given a pre-test and a post-test based upon conceptual knowledge of statistics, experimental design, and research methodology held by the trainees at the beginning of the Institute. This pre-test - post-test consisted of a series of questions for which the semantic differential technique was used to estimate the degree of applicable knowledge on a bi-polar scale range from 'unfamiliar' to 'competent'. In this instance the word 'competent' meant not only that they had acquired knowledge but they could use it in a working situation. The degree of knowledge of the institutees in the pre-test was very low; the mean for that was 36.66 with a minimum possibility of 22 points. The final (post-test) mean was 98. On an individual basis an average gain of 60.08 was computed, which is very statistically significant at greater than .01 level. A chart found in the appendix of this report will present these data for further clarification. The pre-test responses indicated that the institutees had some knowledge of the group of statistics which are concerned with measures of central tendency. They had almost no knowledge of such things as evaluation models, parametric or non-parametric statistics, multivariate statistics, computer analysis, analysis of variance or co-variance and program and evaluation review technique (PERT). It was in these latter areas that the most apparent gains were made by the trainees.

The major requirement of the six-week Institute for each participant was the creation of a research proposal that was educationally relevant to the problems in his school district, or educational agency. In the appendix of this report will be found a copy of the title of each of the proposals that the institutees created. It was apparent from reading these proposals that the trainees had made a very significant amount of growth, particularly in the use of program evaluation and review technique (PERT) and the use of the evaluation models.

The participants apparently came to this program expecting merely to be taught statistics and then be asked to apply them to their research models. The approach taken by the instructional staff was to stress the development and implementation of a model first and then to explore the appropriate types of statistics against these models. We found that the institutees experienced some difficulty in adjusting to these expectations. To restate this another way, they came to the Institute with the preconceived notion that they would focus almost totally on statistics while the major professors were concerned with the ability of the institutees to first describe and to document what it was that they wanted to research, and to examine and specify alternate design strategies and, finally, to employ appropriate statistical analyses and facilitate their judgment of project results.

In addition in the appendix will be found the titles of each of the institutees several computer programs with an indication of what kind of output they create in addition to this in the appendix one will find a variation of mimeographed documents that were passed out to the institute trainees.

Three major texts were used in this institute:

1. Statistical Analysis in Psychology and Education - George A. Ferguson
2. An Introduction to Educational Research - Robert M. W. Travers
3. Digital Computer Programming - Thatcher and Capato.

In addition, extensive use was made of N. E. Gage's Handbook of Research on Teaching, and each participant was provided a copy of the Campbell and Stanley chapter from that text, which is now available under separate cover.

During the six weeks of this Institute the facilities at the Bureau of Educational Research and Testing Services were extensively used. A formal field trip was made to the Bureau where its staff made a presentation on the use of a variety of forms and the use of optical scanning equipment. This was an attempt to update the people factually and also their abilities to think about how information might be collected and processed. In addition to the daily instructional format the participants were presented 10 guest lecturers - six of whom were included in the original proposal - and four guest speakers - two from the New Hampshire State Department of Education, one from a public school system in the state of New Hampshire, and the Director of the Computation Center of the University of New Hampshire.

The first lecturer of the Institute was Dr. Daniel Stufflebeam, who presented material on July 9th and 10th, relative to his CIPP model, (Context, Input, Process and Product Evaluation). This seemed to be a very meaningful presentation to the institutees, since it was not statistical in nature, but was oriented toward helping them ask appropriate questions and the planning of strategies for seeking the answers. It was particularly well received because its applications to everyday school people and problems were easy to follow.

Dr. Desmond Cook, on July 11th and 12th, discussed the use of PERT (Program Evaluation and Review Technique) as it is applied to educational research. Again, Dr. Cook was extremely well received. Very few of the institutees had any prior knowledge of PERT or its applications to educational research. Dr. Stufflebeam's and Dr. Cook's material was extensively used by the institutees, both in their subsequent discussions, and in their final proposals.

On July 17th the institutees came to the Bureau of Educational Research and Testing Services, where Robert Hart made - as a supplement to the ten scheduled lecturers - a presentation concerning the use of optical scanning equipment.

On July 23rd, Dr. John Finger of Rhode Island College discussed problems of data analysis as a result of statewide testing. He assessed three major points in his presentation: the first was a review of the problems in making definitive statements about a state school system as a result of statewide testing; second, the importance of stating clear program objectives prior to the start of a testing program; and third, the question of statistical, as opposed to educational, significance of test data.

The next scheduled speaker was to be Dr. Victor Taber of the State Department of Education of New York to discuss the evaluation of Title I and Title III programs in the State of New York Department of Education. Becuase of personal problems, Dr. Taber could not attend. He did send in his stead Miss Priscilla Hayward, his assistant director and the coordinator of assessment of Title I. Miss Hayward covered very thoroughly how New York is attempting to evaluate its Title I projects. The institutees were particularly concerned and impressed with the state's attempt to establish base line data and a cutoff point which would be used as an indicator of problem areas, and where Title I was, or was not, being successful in its attempts to improve education.

On July 29th, Dr. Richard Neville spoke on the role of the supervisor and his responsibilities in the area of educational research. He focused on three major points that the institutees reacted to most positively. The first was the role of the principal in the elementary school - does he make a difference? The second was the role of the elementary school principal as a producer of change, and the role of the school as a mass production versus unit production oriented system.

Finally, he discussed the question of purpose and product or efficiency and effectiveness. The above points were made very cogently and were well received.

On July 30th, Dr. John Cawley spoke on the question of the interpretation of test data and from what perspective one might look at these results. Dr. Cawley's two major points were that there are many ways of looking at data, and it being particularly crucial as to which set of data you use as your reference, and second, the question of alternative methods of recording teacher-pupil interaction using basic materials and evaluation techniques.

On August 1st, Mr. James Carr and Mr. Joseph Cannistraro spoke to the Institute. Mr. Carr is Consultant (Guidance, Counseling and Testing), New Hampshire State Department of Education. His discussion focused first on an historical perspective to the statewide testing program in New Hampshire. The second issue was a question of "where do we go from here?", centering on the discussion of the broadening of the statewide program. The third area of concern was the role of leadership that the State Department of Education will play in the use of test results, particularly as these results are used to help school personnel make guidance, instructional and administrative judgments about their schools.

Mr. Joseph Cannistraro, Guidance Counselor at the Rundlett Junior High School in Concord, New Hampshire, reviewed his use of test results at Rundlett, and elaborated on their wide use of stanines both for grading and for other systems of reporting student ability or achievement. He also discussed uses of the data for grouping children by ability.

On August 6th, Mr. Stuart Pickard (Director, Planning, Development and Evaluation), Division of Instruction, New Hampshire State Department of Education, made four major points of interest to the institutees. The first was an overview of the wide variety of excellent sources of information about education research, such as the Educational Index and the Review of Educational Research. His information about the ERIC materials was particularly relevant, and the institutees should be able to make good use of the materials in the future. His third point was a discussion of the continuing concern that State Departments of Education have for the evaluation of Title I and Title III projects, which is very relevant at this time. His fourth major point was the concern expressed in terms of the reasons proposals are rejected and the need for stating educational objectives in behavorial terms.

On August 7th, Mr. Richard Burrows, Acting Director of UNH Computation Center, spoke to the Institute on the updating of the status of the University's Computation Center, and particularly the use of remote terminals. Secondly, he reviewed present cost factors, and discussed the future of computer science and its applications to educational problems.

In all of the above, with the exception of the four external speakers, the day presentation schedule was modified. The speakers in general made a presentation from 8:30 to 10:00 AM, and in the case of Stufflebeam and Cook, they again made a presentation in the second half of the morning. Then the Institute met from 1:00 to 2:30 PM for a discussion and answer period with the speakers. With the other four speakers the morning session was used for making a presentation, and from 1:00 to 2:30 in the afternoon, the lecturers served as a resource person to answer questions that were of particular interest to the Institute.

In summary then, it seems fair to state that the institute achieved many of its goals and objectives. The final judgement, however, of the effort of the institute will have to wait on the activities and research efforts made by the trainees themselves to facilitate this. The director and associate director of the institute are planning a vigorous follow up effort to continue the relationships developed during the six week institute itself.

As noted earlier in this report in the appendix will be found a table titled Statistical Data and Tests for Significant Gain in Perceived Knowledge. It would seem to the writer that this table deserved careful studying for it seems to substantiate markedly the opinion that the trainees did in fact aquire a considerable amount of valuable knowledge. Of the twenty-two areas of knowledge measured only five did not show a statistically significant gain over the six weeks at the institute. It is further encouraging that those areas which are most statistically significant fall into the areas most stressed in the original five objectives of the institute.

In addition, in the appendix of this report will be found a sample of a variety of types of materials that were prepared for this institute.

APPENDIX

Richard Cardner: Evaluation of proposal"A PROGRAM FOR EVALUATION OF A SCHOOL READINESS PROGRAM"

A) Strengths

1. Title reasonably good
2. General introduction to the problem - very good
3. Reference to literature - very good
4. Criteria for evaluation - very good
5. Use of 'PERT' is very impressive
6. Awareness of the difficulty of the research - excellent

Fernand Prevost: Evaluation of proposal "AN EXPERIMENTAL APPROACH TO TO THE TEACHING OF PRIMARY SCHOOL MATHEMATICS"

A) Overall Evaluation

Excellent, well documented and carefully thought out

B) Strengths

1. Good title
2. Excellent introduction
3. Design seems to be well thought out
4. Very interesting and clearly and candidly stated
5. Results or expected results based on James Lucas's study
6. Use of "PERT" excellent
7. Proposed use of statistics appropriate

David Mann: Evaluation of Proposal "EVALUATION OF PRESENT SYSTEM OF STUDENT SCHEDULING AT EXETER HIGH SCHOOL IN ORDER TO RECOMMEND DESIRABLE CHANGES"

A) Overall Evaluation

A well thought out project

B) Weaknesses

1. No reference to what others have learned in this same area. Should propose some study of the literature.

C) Strengths

1. Statement of areas of examination - very good
2. Title quite clear
3. Time schedule seems quite realistic

Hugh Holt: Evaluation of proposal "EXPERMENTAL EVALUATION RESEARCH PROPOSAL AND DESIGN"

A) Overall Evaluation:

An excellent proposal, but I still don't know where and on what population this is going to be tried.

B) Weaknesses

1. Title is unclear. I don't know what the study is about.
2. The second section called proposal outline and terms does not give a setting of the study.

C) Strengths

1. The first section called problem context is exceptionally well done.
2. The three statements of premises are particularly excellent
3. The section on selection is quite good
4. Hypothesis are well stated and clear

Donald Ellis: Evaluation of proposal "NON-GRADING MY ELEMENTARY DISTRICT"

A) Overall Evaluation

The objectives are stated adequately but no indications are given as to how they will be achieved, what evaluation proceedures will be used, and there are no limitations stated for the study.

B) Weaknesses

1. I don't know what "my elementary district" means
2. Statement of the problem very general - no definition of the term non-graded
3. I do not understand the inclusion of the statement of the high school principal in a report that is concerned with non-grading of elementary school primary grades.

C) Strengths

Under the heading "setting" the location of the school is quite adequately stated.

D) Again all things cannot be done in one study for all children

Ray Brennick: Evaluation of proposal "OPERATION BOOTSTRAP"

A) Overall Evaluation:

Quite a good project
Introduction good, statement of problem is reasonably clear

B) Weaknesses:

1. Does not define terms such as Comprehensive, exceptional students, etc....
2. Deals in too general a way in how he is going to evaluate the study
3. Sets up few limitations for himself and his proceedures are too general
4. There is no actual information given on how the project will be evaluated
5. Does not cite who will be responsible for building these evaluative instruments
6. Does not cite any literature which is related to this study

C) Recommendations:
That Mr. Brennick zero in on just one of the many areas he has indicated here and work on it much more intensively. This I think is best related to his concern for all of the students and yet we all know that nobody can do everything for all students.

R. C. Bailey: Evaluation of proposal "A COMPARISON OF CONVEYED AND NON--CONVEYED STUDENTS AND THEIR SCHOLASTIC ACHIEVEMENT"

A) Overall Evaluation

Rather a good proposal

B) Weaknesses

1. The limitations of the study are a bit fuzzy

C) Strengths

1. Terms seem to be adequately defined
2. Reasonably adequate introduction
3. Statement of the problem is reasonably clear
4. Justification of the study is good
5. Setting of the study is clearly defined
6. The proceedures methods that he is going to employ to proceed with the study seem quite clearly stated.

D) Recommendations

1. The word conveyed probably ought to be changed to transported or bus transported

John C. Emerson; Evaluation of proposal "A PILOT STUDY: THE EFFECTS OF PROGRAM SEQUENCE ON SUCCESS IN SECONDARY SCHOOL MATHEMATICS"

A) Overall Evaluation

In general - very good. The proposal is basically sound

B) Strengths

1. Title - interesting and well stated
2. Statement of problem - quite adequate
3. Reference to literature on the subject - good

C) Recommendations

It seems to be rather sketchily presented, and needs a great deal more detail, than is presently offered.

Donald MacLean: Evaluation of proposal "DESIGN FOR THE EVALUATION OF A PUBLIC SCHOOL"

A) Overall Evaluation

Report is not specific enough. I know the general areas and categories that work will be done in but no information is given to me on the limitations of the study, defining the proceedures, no review of the literature or reference to literature is made.

B) Weaknesses

1. How and by what means the research will proceed, is not clearly stated.
2. Title - very broad - does not state what is to be evaluated
3. Area of standards are broad categories, need to be more specifically stated

C) Strengths

1. Use of "PERT" technique - very interesting

George Putz: Evaluation of Proposal "A SCENARIO FOR HIGHER EDUCATION"

A) Overall Evaluation

Excellent
Ability to implement it or evaluate it, unknown
Realistic rating - let's take a small part of it, and try working it out

B) Strengths

1. General introduction - very good
2. Statement of the problem - fascinating
3. A very provocative paper; its implications are far reaching
4. Title - intriguing

Stanley Hall: Evaluation of proposal "AN INTERMEDIATE CRITICAL THINKING EVALUATION"

A) Overall Evaluation

Very good, a very comprehensive job

B) Weaknesses

1. Title not clear. I think he means the development of an instrument to test critical thinking.

C) Strengths

1. Statement of the problem - quite good
2. Familiarity with the research and related literature - excellent
3. Proceedures - quite adequate

David Beisel: Evaluation of proposal "not given"

A) Overall Evaluation

Needs careful work on the limitations of the study, and proceedures to be used

B) Weaknesses

1. Proposal is not adequately stated, although interesting
2. Two questions asked at the end of the report are very pertinent but very difficult to assess.

C) Strengths

1. Introduction adequate - his own philosophy. Clarification of his own model for cirriculum development through group dynamics.

2. Use of "PERT" work breakdown structures - interesting.

Leland Churchill: Evaluation of proposal "GRADE TEN READING PROJECT"

A) Overall Evaluation

Good

B) Weaknesses

1. Title too general
   First question posed is not clear, there is no obvious comparison with another group being made. It is not clear just what treatment will be given to Group 2 and Group 3 that may be compared with the treatment given to Group 1.

C) Strengths

1. Statement of the problem, quite general, but reasonably clear.
2. Use of the factorial design very interesting if it is appropriate

Anne K. Lee: Evaluation of proposal "DEVELOPMENT OF A MATHEMATICS PLACEMENT TEST FOR THE WOODSTOCK COUNTRY SCHOOL"

A) Weaknesses

1. There does not seem to be any amount of limitation
2. The proceedures for actually persuing the study are not too clearly spelled out

B) Strengths

1. Title is appropriate
2. Introduction is adequate
3. Statement of the problem is reasonably clear
4. Sequence of the operation proposed seems to be adequate

C) Recommendations

The proposal seems rather broad and perhaps should be broken down into smaller pieces, to be researched, each individually

Charles St. Paul and John Kelleher: "WORK--STUDY PLAN, LAWRENCE HIGH SCHOOL"

A) Overall Evaluation

It is not very specific

B) Weaknesses

1. Title - quite vague
   The term work-study program is not particularly well defined for this local Lawrence High School situation

continued Charles St. Paul and John Kelleher

2. The specific goal of this project are not well stated
3. The methods of assessment are not really stated at all
4. There are few limitations stated and the proceedures for evaluation are inadequately stated

C) Strengths

1. The introduction to the problem is reasonably straightforward
2. The reference to related literature is adequate
3. Attempt at task diagram - very good

D) Recommendations

Define goals more clearly ie., is it good only for potential drop-outs to have work-study programs or is it good for others

William C. Lary: Evaluation of proposal "TO SYSTEMATICALLY REGENERATE A HUMANISTIC SCHOOL PHILOSOPHY AT HOLLIS HIGH"

A) Overall Evaluation

The general format of the proposal is quite good, and shows a great deal of time and thought and energy

B) Strengths

1. Breaking it down into phase 1 and phase 11 seems reasonable
2. General introduction is quite adequate
3. The attempt at using a work breakdown structure is excellent

C) Recommendations

1. The purpose which states "to study human nature in the context of a public school" is a very broad, even though laudable idea; it needs to be narrowed and tightly defined
2. The development of an instrument to say what is the present philosophy and how perhaps it should be changed to become more humanistic will be very difficult

Roger L. Marchand: Evaluation of proposal "PILOT STUDY OF THE EFFECTS OF REMEDIAL READING AND COUNSELING IN COMPARISON TO JUST REMEDIAL READING IN RELATIONSHIP TO THE IMPROVEMENT OF READING SKILLS AND COMPREHENSION OF CHILDREN, TWO OR MORE YEARS BELOW CAPACITY LEVEL IN READING"

A) Overall Evaluation

Very good

B) Strengths

1. Reading disability well defined
2. Good clarification of problems associated with reading difficulties
3. Good review of the literature on this subject
4. Proceedures and problems well documented

C) Recommendations

1. Title ought to be abbreviated somewhat

Alvord Graham: Evaluation of proposal "TEACHER ASSIGNMENT FOR PRE-DROPOUTS"

A) Overall Evaluation

Title not clear, don't know what the study is about as a result of reading it.

B) Weaknesses

1. Statement of problem is a bit hazy
2. Definitions of teachers are more encouraging to pre-dropouts than others, and the word staying power of teachers
3. It is not really clear as to how the teacher variable here is going to be assessed
4. The proposal is very general
5. There is no justification of the study, no setting of the study, no limitations
6. Proceedures are very sketchy
7. No indication of any review of literature

Eleanor Terreson: Evaluation of proposal "EDUCATIONAL INNOVATIONS SUMMER 1968"

A) Overall Evaluation

It is difficult to understand what is unique about this project, as opposed to what in general most teachers would hope to be doing.

continued Eleanor Terreson

B) Weaknesses

1. It is not clear why one finds the series of dittoed sheets in the front of the proposal
2. Unclear about what Miss Terreson means by "I am a believer in the whole child"
3. No stated introduction
4. There is no statement of a problem other than a very broad and very general concern for a great variety of things.
5. Slight hint of the setting of the study
6. There are no limitations
7. There are no set of proceedures by which any evaluation of what's going on is going to be made

No reference to a review of any kind

Bruce J. Kinney: Evaluation of proposal "AN APPROACH TO INSTRUCTION AT THE KINDERGARTEN LEVEL"

A) Overall Evaluations

Basic ideas behind the proposal are sound but there is a great deal of detail lacking - really quite general

B) Weaknesses

1. I question the statement "cutting down the number of slow learners" I don't think any study cuts down the number of slow learners. It may identify them more adequately and thereby make it possible to prescribe aid for them
2. There are no limitations stated
3. The person or persons responsible for this project are in no way indicated nor is their position in the line staff indicated

Gordon Flight: Evaluation of proposal "AN ORGANIZATIONAL PLAN TO PROMOTE INDIVIDUALIZED INSTRUCTION IN GRADES 4 THROUGH 6 IN SOCIAL STUDIES IN THE GROVETON, N. H. SCHOOLS"

A) Overall Evlauation

Excellent

B) Strengths

1. Title reasonably good
2. Origin of Problem - good
3. Clarification of proposed research project, page 1, very good
4. Impressive documentation in the beginning of the proposal
5. Introduction - very good

Richard E. LeClaire: Evaluation of proposal "TESTING PROGRAM"

A) Weaknesses

1. Title too broad. It doesn't give any real information about the subject of the proposal
2. Reason for the inclusion of the letter to Mr. Francis Wilson about Alden Lovell's HBW (Harcourt, Brace & World) proposal is not really clear to me.
3. There are no proceedures specifically alluded to

B) Strengths

1. The statement of the problem is reasonably good, except that it is extremely broad and not narrowed down to a really researchable problem.
2. There is a series of objectives which are well stated, but no real method of attainment of those objectives is offered.

C) Recommendations

Perhaps the proposal should have involved just the question that is offered last and that is "can the administration, faculty and guidance department of Sanborn Regional High develop a testing program" and then pose questions about how one would persue this.

Lionel DeLacey: Evaluation of proposal "EVALUATION OF A PRIMARY NON-GRADED SCHOOL"

A) Overall Evaluation

In general, pretty good

B) Weaknesses

1. Title - very broad and very general
2. The terms are not clarified nor defined ie., non-graded, student success suggestions
3. Evaluation in terms of statistics where comparisons are being made between groups is not very clear (this is called the second phase of the evaluation)
4. Few limiting factors in the study, limitations need to be more clearly spelled out
5. Proceedures are somewhat vague

C) Strengths

1. Good introduction to the problem
2. Three evaluation questions posed quite good
3. Evaluation in terms of using PERT and CIPP models appropriate

Sister Jacqueline Hebert: Evaluation of proposal "A RESEARCH PAPER ON THE 5 YEAR PROJECTION OF CATHOLIC SCHOOL SYSTEMS IN THE DIOCESE OF MANCHESTER, N. H."

A) Overall Evaluation

Very good

B) Weaknesses

1. The paper seems to raise more questions than answers. It does not pose a method of attack . These need to be stated.

C) Strengths

1. Good title
2. Statement of the problem - quite direct and adequate. The statement "we must identify our aims in Catholic Education" it seems to me is one of the most crucial statements in this whole paper.
3. Statistics and drawings at the end of the paper are interesting and quite factual.

D) Recommendations

A set of research proceedures is what probably should be the first step in attempting to move on this problem.

HEW INSTITUTE '68

PROGRESS CRITIQUE Date: ________

Directions: We would like you to evaluate, as you see it, the progress of the HEW Institute and offer your constructive suggestions and criticisms of our activities to date. Listed below are some of the activities, materials, and personnel with whom you have had contact. Please respond to each of these major objectives by checking your feelings toward each product area listed to the right of the objective. Apply a four-point scale of 1=Poor, 2=Fair, 3=Good, 4=Excellent, or NA=Not Applicable. Additionally, list in narrative form the perceived strengths and weaknesses of each presentation and your suggestions for improvement in pursuing the objective. Finally, use the reverse of the form for recording additional reactions to the Institute, and especially note your ideas concerning plausible objectives for the remaining week(s) of the Institute.

Activity - Materials - Personnel	Theory Underlying Object.	Text(s) and Library Matrls	Supplementary Materials	Clarity of Presentation	Gain in Factual Knowledge	Comprehension of Objectives	Applicability of Objectives	Overall Evaluation
Gil Austin - Intro., Ferguson, Campbell-Stanley, consultation								
Al Elwell - Prelim. Proposal (RAPE), Ferguson, Campbell-Stanley, consultation								
Dan Stufflebeam - CIPP -								
Desmond Cook - PERT -								
Jim Estes - Intro, Flow diag., FORTRAN								

HEW INSTITUTE '68

PROGRESS CRITIQUE

Date:________

Directions: *We would like you to evaluate, as you see it, the progress of the HEW Institute and offer your constructive suggestions and criticisms of our activities to date. Listed below are some of the activities, materials, and personnel with whom you have had contact. Please respond to each of these major objectives by checking your feelings toward each product area listed to the right of the objective. Apply a four-point scale of 1=Poor, 2=Fair, 3=Good, 4=Excellent, or NA=Not Applicable. Additionally, list in narrative form the perceived strengths and weaknesses of each presentation and your suggestions for improvement in pursuing the objective. Finally, use the reverse of the form for recording additional reactions to the Institute, and especially note your ideas concerning plausible objectives for the remaining week(s) of the Institute.*

Activity - Materials - Personnel	Theory Under-lying Object	Text(s) and Library Materials	Supplementary Materials	Clarity of Presentation	Gain in Factual Knowledge	Comprehension of Objectives	Applicability of Objectives	Overall Evaluation
Gil Austin - Instructional, Consulting								
Al Elwell - Supplementary Materials, Consulting								
Jim Estes - Computer Science								
Pricilla Hayward - Title I, New York State								
John Finger - Testing Programs								

HEW INSTITUTE '68

FINAL PROGRESS CRITIQUES

8/09/68

Name: ______________________________

Directions: We would like you to evaluate, as you see it, the progress of the H.E.W. Institute and offer your constructive suggestions and criticisms of your experience to further assist us in planning future Institutes.

Listed below are some of the activities, materials, and personnel with whom you have had contact. Please respond to each objective by checking your feelings toward each product area. Again, apply a four-point scale of 1=Poor, 2=Fair, 3=Good, 4=Excellent, or NA=Not Applicable. Use the reverse of this page for any additional comments or reactions. Finally, a category for your Total Reaction to the 1968 Institute is presented in this critique form. Here we would like you to note your total impression of the Institute Experience.

Activity - Materials - Personnel	Theory Underlying Objective	Text(s) and Library Matrls.	Supplementary Materials	Clarity of Presentation	Gain in Factual Knowledge	Comprehension of Objectives	Applicability of Objectives	Overall Evaluation
Gil Austin -- Instructional and Consultation								
Al Elwell -- "								
Jim Estes -- Computer Science & Programming								
Richard Neville -- Univ. of Maryland								
John Cawley -- Univ. of Connecticut								
Jim Carr -- N.H. State Dept. Education								
Joe Cannistraro -- Rundlett JHS								
Stu Pickard -- N.H. State Dept. Educ.								
TOTAL INSTITUTE EXPERIENCE								

Comments on your Institute Experience:

TABLE -- Statistical Data and Tests for Significant Gain in Perceived Knowledge - Summer Institute 1968

	Content Area	$\bar{X}$-Pre	$\bar{X}$-Post	$\bar{D}$	$s_{\bar{d}}$	$t_{\bar{D}}$	P
a.	Evaluation Models	1.58	4.83	3.25	1.26	+2.58	>.01
b.	Program Evaluation and Review	1.71	5.04	3.33	1.46	+2.28	>.025
c.	Parametric Statistics	2.00	4.17	2.38	1.44	+1.65	n. s.
d.	Nonparametric Statistics	1.50	4.17	2.67	1.27	+2.10	>.025
e.	Multivariate Analysis	1.17	3.50	2.33	1.40	+1.66	n. s.
f.	Measures of Central Tendency	2.42	5.38	2.96	1.73	+1.71	>.05
g.	Measures of Variation & Symmetry	1.83	4.54	2.71	1.57	+1.73	>.05
h.	Probability Theory	2.25	4.50	2.21	1.89	+1.17	n. s.
i.	Sampling & Sampling Distributions	2.42	4.92	2.50	1.47	+1.70	n. s.
j.	Hypothesis Testing	1.88	4.67	2.79	1.56	+1.79	>.05
k.	Linear Relationships	1.38	4.08	2.71	1.17	+2.32	>.025
l.	Correlation of Quantitative Data	1.67	4.79	3.12	1.15	+2.71	>.01
m.	Correlation of Qualititative Data	1.58	4.62	3.04	1.33	+2.29	>.025
n.	Internal and External Validity	1.46	5.04	3.58	1.56	+2.29	>.025
o.	Comparative Experiments	1.50	4.38	2.88	1.48	+1.95	>.05
p.	Analysis of Variance	1.38	4.21	2.96	1.27	+2.33	>.025
q.	Analysis of Covariance	1.25	3.88	2.62	1.41	+1.86	>.05
r.	Optical Scanning Document Design	1.12	3.00	1.88	1.42	+1.32	n. s.
s.	Data Processikng Configurations	1.12	3.96	2.83	1.40	+2.02	>.05
t.	Computer Programming	1.50	4.58	3.21	1.14	+2.81	>.005
u.	Instrument Design and Evaluation	1.25	4.46	3.46	1.09	+3.17	>.005
v.	Research Proposal Requirements	1.83	5.12	3.29	1.33	+2.47	>.025
	TOTAL INSTITUTE CONTENT (average scale score)	36.67 (1.67)	98.00 (4.45)	60.08 (2.73)	25.76 -----	+2.33 -----	>.025

N=24 (complete pre-post evaluation data); df=23; $t_{\bar{D}}$ required at selected levels of significance (all one-tail): .05=1.71, .025=2.07, .01=2.50, and .005=2.81)

HEW PROGRAM TITLES

Terreson, Eleanor	Grade Scores, Average (Mean) 1. List of scores, each list labeled 2. Mean of each list (labeled) 3. Standard deviation of each list (Labeled) 4. Correlation Coefficient Lab Assignment: Pencils, 3¢ each over 5, 5¢ each up to 5 and 5; for any number of pencils Lab Assignment: Exam Grades - how many failed, how many passed, how many scored 95 or above
Marchand, Roger	Readability Formula for books for Grades 1-8, giving grade and interest level. Program showing how many students passed, how many failed and how many received 95 or above. Program giving the means, standard deviations and correlations of two sets of scores
Churchill, Leland	Lab Assignment - list labeled scores, compute mean, standard deviation, correlation coefficient. Label each. Final Program - Compute mean, median, mode, $\bar{X}$ and standard scores.
Holt, Hugh	X, Y variables w/lists, means, standard deviations, correlation coefficients. Program - sort cards (grade), fail/pass/pass high
Lary, Bill	Lab: Raw score, standard ecore, mean, median, mode Final Project: Mean, standard deviation, Correlation
St. Paul and Kelleher	Sorting Program
Cardner, Richard	Final Program: Program to calculate the mean, standard deviation, skewness, kurtosis, and standard scores. (revised) Program for 2 sets of scores ++ lists of scores, means and standard deviations, correlation coefficients
Beisel, David	Determining number of grade scores below 70 and above 90
Bailey, Ronald	Pencil Problem
Emerson, John	Final Project: Mean, median, mode, standard deviation, standard scores, skewness and kurtosis
Graham, Geoffrey	Lab Assignemnt: Mean, standard deviation, correlation coeff.
Lee, Anne K.	Program to compare mean, standard deviation, correlation coefficient.

Lee, Anne K. (con't)	Program: mean standard deviation, skewness, kurtosis, standard score
Hebert, Sister Jacqueline	Program for obtaining mean, standard deviation, correlation coeffieients for 2 grades lists
	Project for obtaining scores, means, standard deviation, mode, median
Hall, Stanley	Sort (ascendency)
	Scores, means, standard deviation, + correlation, standard scores, kurtosis and skewness
	Count 2 sets of data (could be averaged) and the highest score tabulated
Prevost, Fernand	Given 2 sets of scores, program computes mean, standard deviation, standard score and correlation coefficients. Printout includes raw scores and standard scores.
Kinney, Bruce	Mean, standard deviation, kurtosis, skewness, standard scores
	2 sets of data, mean, standard deviation, correlation coeff.
	Final Project: Kurtosis, standard scores, mean, standard deviation, skewness
Alvord, Graham	For two groups of scores compute the 1. means 2. medians 3, modes 4. standard deviation Indicate negative or positive skewness, also shape of curve print out raw scores and standard scores.
Putz, George	Multiple means, multiple standard deviations and multiple correlations
	Computes a ranking for grades
LeClaire, Richard	Ranking of students by range of scores
	Multiple means and standard deviations + correlation coefficients
DeLacey, Lionel	Multiple means and standard deviations
	Computes means, standard deviations, medians, and modes

H.E.W. PROJECT TITLES

John Emerson:

The effect of course sequence on student success in mathematics. The study will be aimed at determining if the placement of mathematics content courses at different places in the high school sequence has a bearing on the success of students studying mathematics.

Gordon Flight:

Project Abstract:
An Organizational Plan to promote individualized instruction of social studies in grades IV, V, and VI in the Groveton, N. H. School.

(The purpose is to develop an appropriate plan for organization and initiation)

Donald Ellis:

Abstract:
I am in the process of non-grading an elementary school district as a result of merging six small schools into a body of approximately 550 students.
Maybe we should start by just non-grading the primary? Maybe we can't non-grade at all. We have over a year to research and we are certainly going to try!

Geoffrey Graham:

Proposal:
To study primary grade children with learning difficulties, especially in the motor-perceptial areas.

A team of qualified people in medicine, speech, psychology, psychiatry, and physical education will help us assess pupils' individual problems. Instruments to measure problems and progress are being developed.

The goal is to move from separating these youngsters from the normal classroom to better meeting their needs within the classroom and total school environment.

H.E.W. PROJECT TITLES

Dick LeClair:

Testing program- Evaluation of curriculum, methods of instruction-modification of the instructional system.

Marking system - simplification of determining class rank with weighted grades.

Leland Churchill:

A project which allows two types of educational treatments of reading and basic English to be tested for its educational and statistical significance using a pre-test - post-test control group experimental design.

Sister Jaqueline Hebert:

My project was to give as perfectly a s possible a projection of the Catholic education problem facing the Manchester Diocese of Education. In the next five years there will be inevitably a decrease in pupil enrollment, a rise in education cost triple if not more what is known today and the danger of of closing many small schools, elementary or higher. This latter step will definitely affect your pocketbooks. We want to prevent a major catastrophy affecting you.

Hugh Holt:

Out of motivation to really enable teachers to individualize instuction the proposal encompassed a grouping based upon reading ability and uniquely structured and for a small (2 classes at each grade level) school, That is, the top and bottom 1/4 were grouped with one teacher for certain instruction and the middle 1/2 were the others. Homogeneous grouping was provided in other instructional areas etc..... Testing was proposed for achievement growth, social/emotional effects and actual individualization resulting from the grouping.

H.E.W. PROJECT TITLES

Charles St. Paul and John Kelleher:

WORK STUDY PLAN

OBJECTIVES:

1) To decrease the drop-out rate and dicipline problems in Lawrence High School
2) To attempt to make education meaningful to this type of student.
3) To place these students in job areas which will provide them with the opportunity for permanent employment.

PLAN:

The students will spend the A.M. session, 8 to 12, in school and be released for work at 12:00.

Fernand J. Prevost:

An Experimental Approach to The Teaching of Primary School Mathematics.

Donald MacLane:

I "PERT" ed a general evaluation of what we in my school will be involved with this year. I also took an area and made a "PERT" design for that area giving target dates and showing the way we planned to go.

David Mann:

Evaluation of computer scheduling of a high school - what should we be looking for in terms of parameters.

Grahan Alvord:

Pre-dropouts will be identified (out of step with classmates), their experience with teachers rewarded, teachers will be identified who encourage the pre-dropout to remain in school, with the purpose of inspiring future assignments of pre-dropouts.

H.E.W. PROJECT TITLES

Lional DeLacey:

Evaluation of a Non-graded Elementary School, K-6

The three major areas to be evaluated:
1) Curriculum
2) Student progress and reaction
3) Teacher influences and reaction
Tools - PERT, CIPP - test and survey tools

Raymond Brennick:

Operation Bootstrap

A Curriculum development project - grades 7-12 including a regional Vocational Center as part of the comprehensive program.

George Putz:

A Scenario for Higher Education: A Prolegomena to a Proposal for reform.

Anne Lee:

A proposal dealing with plans for devising a comprehensive test in numerous sections, to be used in placing students from a wide variety of backgrounds in secondary lavel math courses at the Woodstock Country School.
(I will not be at the Wayland address most of the coming year, but at Woodstock Country School, South Woodstock, Vermont. I will however, be reachable indirectly and during vacations directly at Wayland.)

David Beisel:

Can School Communications Be Improved So That Teachers Can/Will Develop Positive Affects Within That School?

AFFECTS	VEHICLES
1) School Philosophy	By dept. head and teachers
2) Public Relations	By specific persons and/or
3) Team Work	teacher-parent home talks
a. team planning & teaching	Human relations specialists
b. integrate communication	Sensitivity training
c. teacher fellow program	Intergrated course
4) Evaluation	
a. within department	
b. resident observer	(see pg. 10 of proposal)

H.E.W. PROJECT TITLES

David Beisel (cont.):

c. pre/post student and teacher questionaire
d. attendance
e. cafeteria use
f. open lab use
g. failures and dicipline

Stanley Hall:

I have going a three phase project which creates, pilot studies, and more rigorously evaluates an ' INTERMEDIATE CRITICAL THINKING APPRAISAL ' for grades 7 and 8 of public schools in New Hampshire. It is like the Watson-Glaser Critical Thinking Appraisal in Base, theory, and form, but more elementary.

Richard Cardner:

We have established a readiness room (Ilg & Ames - School Readiness) which consists of children we feel unready (maturationally) for grade one activities. They are selected by a combination of:
1) Metropolitan School Readiness Examination
2) Gesell Developmental Examination
3) Parental and Staff observation
We hope to evaluate their progress (compared to a matched group) in terms of:
1) dicipline
2) adjustment
3) achievement
4) self concept
5) desire to learn
6) school readiness

Ronald Bailey:

A Comparison of Conveyed and Non-Conveyed Students and Their Scholastic achievement.

This proposal is a pilot study of a transportation problem in a large school district in Maine. The problem is time being spent on the bus and does this extended time affect the learning of the students involved as compared to walking students.

Eleanor Terreson:

The project of Title I in reading in Terryville, Conn. is what I will be working on, in effect, all year. I am solely responsible for the execution of the job of helping Title I students to improve in reading ability, and also become better adjusted in the social and physical aspects.

/

H.E.W. PROJECT TITLES

Roger Marchand:

Pilot study comparing reading differences between children who have remedial reading and counseling and those who have just remedial reading. The purpose is to see if those who have both services show significant differences from those that only have the reading.

Bruce Kinney:

Proposal:
To institute a new program of instuction for the pre-first grade level

The present program was a downward extension of grade 1 - both teachers and materials in to kindergarten. This needs more rethinking and piloy programs to change it into a program for five year olds.

Bill Lary:

Problem:
To regenerate the present school philosophy at Hollis High.

Two phases:
1) Build instuments to evaluate staff and student opinion about humanities program - administer them.
2) Process evaluation to increase; communication
cooperation
effectiveness
efficiency of the school.

Here is the evaluation of your summer proposal. Both Dr. Elwell and I have read them and these are general comments.

By way of review the things we looked for in the proposals essentially were the following.

I. STATEMENT AND DEFINITION OF THE PROBLEM

Introduction
Statement of the Problem
Justification of the Study
Setting of the Study
Limitations of the Study
Procedures
Definition of Terms

II. REVIEW OF RELATED LITERATURE

III. RESEARCH PROCEDURES

Research Design
Orientation of Teachers
Experimental Procedures
Factors Jeopardizing Internal and External Validity

IV. INTERPRETATION OF RESULTS

V. SUMMARY AND CONCLUSIONS

H.E.W. Institute '68

Problem Illustrations of Sources of Internal Invalidity - B

Illustration 1:

An evaluator had to make a choice between SMSG and UICSM mathematics curricula for all ninth grades in the state of New Hampshire. An experiment was run in which the achievement of classes studying under both curricula was compared. A sample of 200 ninth-grade teachers was drawn at random from the population of ninth-grade teachers in the state. One-hundred volunteers were taken to teach SMSG mathematics; the remaining 100 teachers were assigned to teach the UICSM course. The 200 experimental teachers were trained during the summer on their new curricula and then spent two semesters instructing their students. At the end of the second semester, the achievement of the 100 classes taught by SMSG teachers was superior in almost every respect to that of classes taught by UICSM teachers.

What is probably the greatest source(s) of internal invalidity in this experiment?

Illustration 2:

The value of supplemental calisthenics to the physical education curriculum is being evaluated. Of the 500 students enrolled in an elective physical education course in a large high school, 50 were randomly sampled to participate in an experiment as a single class. A randomly chosen 25 of these 50 students were held for 10 minutes after each class and put through a strenuous regimen of calisthenics. The other half of the class was excused. At the end of the semester the two groups (supplemental calisthenics versus no calisthenics) were compared on several measures of strength, agility, balance, etc. On one measure of strength the average score of the 23 students in the no-calisthenics group who completed the course was 104.79, and the average score of the 18 students in the supplemental calisthenics group who completed the course was 128.54. Statistical analysis showed the supplemental calisthenics group to be unquestionably superior.

What is possibly the most important source of internal invalidity in this experiment?

Illustration 3:

An experiment was performed to evaluate the effects of glutamic acid on the intelligence' of mentally defective children. A sample of 100 congenital mental defectives was randomly split into an experimental and control group of 50 subjects each. Pretesting with the Stanford-Binet was performed on all 100 subjects. For six months the experimental subjects received doses of glutamic acid each day. The medication tended to make the experimental subjects hyperactive, distractible, and uncooperative. At the end of the experimental period, all subjects were tested again with the Stanford-Binet. The same researcher gave the pre-test, administered the medication, and gave the posttest. The following data were obtained:

	Experimental Group	Control Group
Pretest	Average IQ = 74.3	Average IQ = 73.9
Posttest	Average IQ = 82.6	Average IQ = 75.1

Statistical analysis revealed that the experimental subjects made significant gains in IQ scores and the control subjects did not. What is probably the most important source of invalidity in this experiment, if such internal invalidity does exist?

Illustration 4 (a real case):

An evaluation of the effectiveness of a public versus parochial school education was undertaken. From a population of 60,000 Catholic school eighth-graders, 1,000 pupils were selected at random. A sample of 1,000 from a public school population of 80,000 was chosen in such a way that they were matched with the Catholic pupils exactly on a test of non-verbal reasoning. The two matched samples were then measured on arithmetic achievement.

The average grade-equivalent score in arighmetic achievement for the 1,000 Catholic pupils was 10.02; the comparable average for the public-school pupils was 9.04. This difference was highly statistically significant, indicating that the parochial schools did a better job of instruction in arithmetic that the public schools.

Is there a possible source of invalidity in this experiment?

Illustration 5:(also a real case):

A study was undertaken of the pattern of attitude change among student teachers. The attitudes toward teaching of 50 student teachers and the supervisory teachers were measured with the Minnesota Teacher Attitude Inventory before and after a semester of student teaching. After considerable rummaging around in the data, the researcher discovered that student teachers whose attitudes were initially poorer than those of their supervising teacher had positive attitude gains from the beginning to the end of the semester. The group of student teachers as a whole did not show an improvement in attitude. The researcher concluded that, if a student teacher is under the influence of a supervisor who holds a better attitude toward education, the student teacher's attitude will improve.

Can you identify an influence in this experiment which might make this conclusion invalid?

H.E.W. INSTITUTE '68

Name: ____ Mastery Test: Correlation Qualitative Data (A)

Problem 1: As most of you struggled through another section of Campbell and Stanley during the twilight hours, your instructional staff was hard at work collecting data at the outdoor swimming pool for input into the next mastery test. The sample data which we humbly submit consists of the observation of 100 Summer School coeds among whom were 7 very well controlled blonds, 32 were blonds with average self-control, and 14 were (at this point of the summer session) very impulsive blonds. We also casually observed 47 brunettes in our sample of which 9 were very self-controlled, 26 were classified as average self-control and 12 were checked out to be very impulsive. Since our only purpose was to save you the time of screening a sample for your statistical problem (we don't have time to compute it for you), decide on the basis of this hard-core information given above whether there exists a correlation between our sample's hair color and their level of self-control as observed by your hard-working instructional staff (use a significance level of .01).

Problem 2: Decide on the basis of the information given in the following table whether there exists a correlation between a student's ability and interest in extra-curricular activities at School A. (Use .05 level of significance).

		Ability	
	Low	Average	High
Low	28	17	15
Average	20	40	20
High	12	28	40

Problem 3: Describe in detail some considerations which might alter the level of significance employed in testing hypotheses? Also, what do you understand to be the meaning of "vetel of significance?

Problem 4: Our sample has a mean of 67.47 and a standard deviation of 3.42 and we wich to generate a 95 per cent confidence interval. We may assume that our distribution is symmetrical for our sample of 30 cases. Can we claim that this interval contains the true mean of the population?

Problem 5: Using the same statistical data as in (4) above, but assuming that we have a skewed distribution in which we wish to place 4 per cent to the left and 1 per cent to the right, compute the confidence interval and determine if this interval contains the true mean of the population.

H.E.W. INSTITUTE '68

Name: ______________________ **Mastery Test - Basic Correlation**

What is a correlation coefficient?

The correlation coefficient (r) is the most commonly used measure of relationship between paired facts, or the tendency for two or more variables (or attributes) to go hand in hand. The quantity r, defined in Formula 1 below, is called the coefficient of linear correlation because of its theoretical relationship to a "straight line." This coefficient is often called the "product moment" coefficient or the "Pearson r" statistic.

When do we use correlation?

In some problems our interest centers on the estimation of scores by means of a regression equation; other problems are concerned chiefly with the mutual interrelationship between two variables as measured by the coefficient of correlation. In the first case there would be practical value in predicting college achievement potential from a prognostic test -- the relationship is known (from known scores or data) and forms the basis for estimating unknown scores. In the latter case - in correlation - the relationship between the variables is intuitively "known" but can also be readily expressed in quantitative form (e.g., $r = .79$).

Problem #1 - Calculation of Pearson "r" from ungrouped data:

To find the coefficient of correlation on ungrouped data, we apply Formula 1 and calculate six sets of component data -- ΣX_i, ΣY_i, ΣX^2_i, ΣY^2_i, $\Sigma X_i Y_i$, and N, and substitute the numerical values of these components into the formula. Although it is easier to employ a calculator or a computer when handling large number of cases, the coefficient can be computed manually. In order that you may gain a "feel" of the statistical operations accrued during the compytation of "r", the following problem should be hand-calculated.

Let us suppose that the values of X_i and Y_i which are given in the following table represent the scores which 10 students obtained in two successive short quizzes in arithmetic and that we are interested in determining the relationship between the quizzes. Apply Formula 1 below to these data and compute the product-moment coefficient. (You will note that summation data for the necessary components are included at the base of the Table -- check your computations against these data.)

Formula 1

$$r_{xy} = \frac{N \Sigma X_i Y_i - (\Sigma X_i)(\Sigma Y_i)}{\sqrt{N \Sigma X^2_i - (\Sigma X_i)^2}\ \sqrt{N \Sigma Y^2_i - (\Sigma Y_i)^2}}$$

POOR ORIGINAL COPY - BEST
AVAILABLE AT TIME FILMED

TABLE 1 - DATA

Student	X	Y	X^2	Y^2	XY	
Mary	8	6				
Bill	6	7				
John	10	8				
Sue	4	5				
Carol	8	9				
Jack	9	10				
Irene	3	5				
Donald	10	9				
Bobby Jo	6	7				
Neil	7	4				
Totals	ΣX_i=	ΣY_i=	ΣX^2_i=555	ΣY^2_i=526	ΣX_iY_i=527	N=

Substituting these component data into Formula 1 we have:

r_{xy} = ____________________ =

The computed correlation coefficient (r =   ) described the strength of the association between the scores which students obtained on the two quizzes. A further interpretation of these data might indicate that ________________________________

____

____

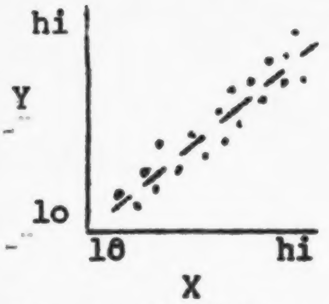
____

____

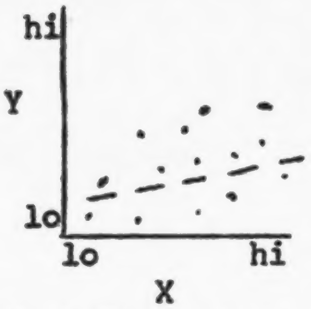
____

You might find it helpful to plot the relationship between Test X and Test Y scores. The "r" computed above has a range limited to -1.00 (perfect negative relationship) through ±0.00 (no relationship or chance) to +1.00 (perfect positive relationship.

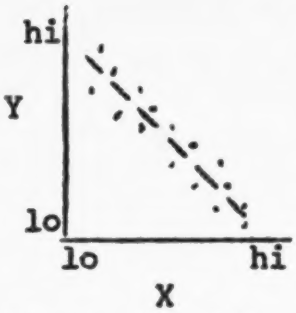
The four figures below illustrate the relationship between theoretical X and Y scores. Geometrically speaking a correlation is positive if the regression line slopes upward, and it is negative if the regression line slopes downward (left-justified).



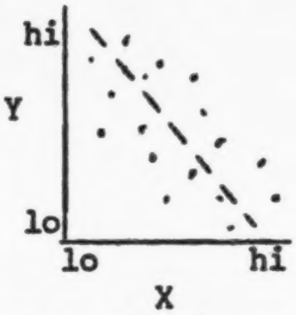
Strong Positive r



Weak Positive r

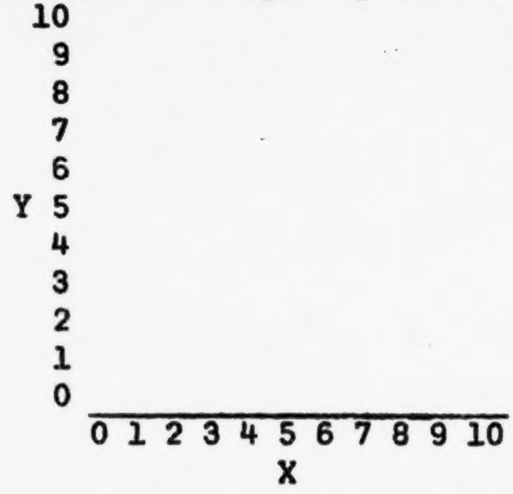


Strong Negative r



Weak Negative r

A rough plot of Table 1 data is as follows:
(also plot a rough regression line)



On the basis of the computed coefficient and its plot, we can conclude that: ______________________________

____

____

____

____

The Rank-Order "r": At times it is convenient to describe the correlation between paired observations by calculating r on the basis of their ranks instead of their actual numerical values. The advantage of this modification lies in the fact that it is much less laborious that the calculations by Pearson's formula. To compute the correlation by ranks the following formula may be applied:

Formula 2: $$r_r = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

If we take, for example, the same data as presented in Table 1, we can replace each value of X and Y by its corresponding rank within each test sample (administration). It does not matter whether we rank the Xs and Ys in ascending or decending order as long as we are consistent. If we choose to rank the Xs from high-to-low, then we must also rank the Ys from high-to-low. (For this problem, let us rank the Xs first, and in decending order)

Student	(X)	Rank of Xs	(Y)	Rank of Ys	d (difference)	d^2
John	(10)		(8)			
Donald	(10)		(9)			
Jack	(9)		(10)			
Mary	(8)		(6)			
Carol	(8)		(9)			
Neil	(7)		(4)			
Bill	(6)		(7)			
Bobby Jo	(6)		(7)			
Sue	(4)		(5)			
Irene	(3)		(5)			
					$\sum d_i^2 =$	48.00

Substituting the component data into Formula 2 above, we have:

$r_r =$ ______________ =

Compare the coefficients computed by the Pearson and rank-order methods. What can you say about these two statistics and, especially, when would you apply each method. What might you be "giving up" by applying rank-order methodology rather than Pearson's method?

____

____

____

SECTION IV: SELECTED BIBLIOGRAPHIC REFERENCES

This list of bibliographic references is not intended to be a complete listing of all of the possible sources pertaining to school program evaluation. Those references considered to be most helpful to evaluation personnel have been selected for inclusion. The more basic discussions are preceded by asterisks.

The references discuss some of the broad topic areas listed below. The letters "A" through "M" at the upper right-hand corner of each reference indicate the areas with which the works are primarily concerned. (For example, Bloom's work Stability and Change in Human Characteristics contains some valuable comments about evaluation design and statistical analysis of data.) Although the letters indicate the primary foci of the references, the categories should not be thought of as completely independent. The classifications are as follows:

A. Evaluation Design
B. Evaluative Procedures
C. Standardized Instruments
D. Informal Tests
E. Preparing Objectives
F. Statistical Analysis of Data
G. Anecdotal Records
H. Interviews
J. Observation
K. Ratings and Rankings
L. Self-Report Techniques (Attitudes, Interests, Personality)
M. Sociometric Techniques

Selected Bibliographic References

B,D,C,H,J,K,L,M

1. *Ahmann, J. Stanley, and Glock, Marvin D., Evaluating Pupil Growth (3d Ed.), Allyn (Boston), 1967.

   General textbook for elementary and secondary school teachers explaining the basic methods of evaluation and giving some basic definitions and statistical terms.

A,C

2. Barrett, Thomas (Ed.), Perspectives in Reading No. 8: The Evaluation of Children's Reading Achievement, International Reading Association (Delaware), 1967.

   Careful analysis of the design and evaluation of reading programs. Includes much information about standardized tests.

F

3. *Bernstein, Allen L., A Handbook of Statistics Solutions for the Behavioral Sciences, Holt (New York), 1964. Paperback.

A,F

4. Bloom, Benjamin S., Stability and Change in Human Characteristics, Wiley (New York), 1964.

   Detailed and involved analysis of the development of human characteristics and how limitations such as environment produce a variation in the development. An attempt to understand how human characteristics may be identified, explained,and eventually modified.

A

5. *Borg, Walter, Educational Research: An Introduction, McKay (New York), 1963.

   Simple and practical presentation of educational research. Book presented in the order that researcher would use in developing and carrying out research.

B,C,D,G,L

6. Bradfield, James M., and Moredock, Steward H., Measurement and Evaluation in Education, Macmillan (New York), 1957.

   Introductory text for educators dealing with the basic concept of measurement and evaluation with some definition of technical terminology. Also explained are the standards appropriate for evaluating pupil achievement and the most efficent way of reporting evaluation to pupils and parents.

D

7. *Bureau of Elementary and Secondary Educational Testing, Improving the Classroom Test, State Education Department (Albany), 1967. Pamphlet.

C

8. Buros, Oscar (Ed.), The 1940 Mental Measurements Yearbook, Mental Measurements Yearbook (New Jersey), 1941.

9. ________, The Third Mental Measurements Yearbook, Rutgers University Press (New Jersey), 1949.

10. ________, The Fourth Mental Measurements Yearbook, Gryphon Press (New Jersey), 1953.

11. ________, The Fifth Mental Measurements Yearbook, Gryphon Press (New Jersey), 1959.

12. ________, The Sixth Mental Measurements Yearbook, Gryphon Press (New Jersey), 1965.

Listings and critical analyses of standardized instruments. Instruments discussed in one edition do not necessarily reappear in later editions unless further data or critical reviews have become available.

A

13. Cochran, William G., and Cox, Gertrude M., Experimental Designs (2d Ed.), Wiley (New York), 1957.

C,D

14. Cronbach, Lee J., Essentials of Psychological Testing, Harper (New York), 1960.

Textbook explaining the basic principles of testing so that educators can select tests wisely, be aware of weaknesses in tests, and judge the merit of new tests emerging. Includes a discussion of some of the more important and widely used tests.

A

15. Davitz, Joel Robert, Evaluating Research Plans in Psychology and Education, Teachers College Press (New York), 1967.

Guide to the establishment and evaluation of educationally oriented programs.

D

16. Dunn, S.S., Measurement and Evaluation in the Secondary School, Australian Council for Educational Research (Australia), 1967.

Explanation of the basic principles of testing with particular emphasis on the development of instruments suitable for testing on the secondary level.

C,D

17. *Durost, Walter N., and Prescott, George A., Essentials of Measurement for Teachers, Harcourt (New York), 1962.

Presents the fundamentals of selecting, using, and interpreting standardized tests. This is a practical presentation of issues that arise in connection with tests and evaluation.

C,D

18. Ebel, Robert L., Measuring Educational Achievement, Prentice-Hall (New Jersey), 1965.

Guide to the correct use of standardized instruments and the development of informal tests at the local level.

F

19. *Edwards, Allen L., Statistical Methods in Behavioral Sciences, Holt (New York), 1954.

Excellent text for research workers in behavioral science. Includes excellent treatment of two and three condition analyses of variance.

20. Engelhart, Max D., "Improving Classroom Testing," National Education Association, What Research Says to the Teacher.

A

21. Federer, Walter T., Experimental Design, Macmillan (New York), 1955.

F,H,J

22. Festinger, Leon, and Katz, Leon, Research Methods in Behavioral Sciences, Dryden (New York), 1953.

Early work that codified research techniques. Includes excellent chapter on the collection of research data by interviewing and the method of sampling and analysis of data that can be useful to the individual planning an interview study.

A

23. Fisher, R.A., The Design of Experiments (2d Ed.), Oliver & Boyd (Edinburgh), 1942.

F

24. Fisher, R.A., Statistical Methods for Research Workers (6th Ed.), Oliver & Boyd (Edinburgh), 1936.

C,F

25. *Freeman, Frank S., Theory and Practice of Psychological Testing (3d Ed.), Holt (New York), 1962.

Emphasis on the psychological foundations of tests and psychological interpretation and evaluation of test findings. Includes a chapter on the historical background of psychological testing and one on elementary statistical concepts.

A,B,E,F

26. Gage, Nathaniel L., Handbook of Research on Teaching, Rand McNally (New York), 1963.

Many-authored handbook with the aim of summarizing, analyzing and integrating research on teaching into closer contact with the behavioral sciences. Intended as an aid in the training of workers in educational research. Excellent as a source reference for research in curriculum and classroom methodology and relevant variables.

F

27. *Garrett, Henry E., Statistics in Psychology and Education, Longmans (New York), 1958.

D

28. Gerberich, J. Raymond, Speciman Objective Test Items, Longmans (New York), 1956.

Guide for teachers explaining a wide variety of testing, measuring, and evaluating devices.

C,D

29. Gerberich, J. Raymond, et al., Measurement and Evaluation in the Modern School, McKay (New York), 1962.

Supplementary volume presenting a short and nontechnical discussion of the application of measurement and evaluation to the problems of instruction in today's schools. Emphasis on improving homemade tests.

A

30. *Good, Carter V., Introduction to Educational Research, Appleton (New York), 1963.

Basic text giving a good description of the process of historical research and the major steps in carrying it out, including collection of data and the preparation of the report. Extensive updating has taken place in this edition.

A,H,J,K

31. Good, Carter V., et al., Methods of Research, Appleton (New York), 1954.

Excellent book developing educational research methods and techniques with a discussion of the concepts, principles, and procedures in educational, psychological, and sociological investigations. Organization of the book follows the steps taken in problem solving.

B,G,J,K,L,M

32. *Gronlund, Norman E., Measurement and Evaluation in Teaching, Macmillan (New York), 1965.

F

33. Guilford, J.P., Fundamental Statistics in Psychology and Education (3d Ed.), McGraw (New York), 1956.

Fundamentals of descriptive and sampling statistics. This revised edition has materials on hypothesis testing, statistical reference, and additional analysis of variance.

34. Harris, Chester W. (Ed.), Encyclopedia of Educational Research (3d Ed.), Macmillan (New York), 1960.

Includes writings appropriate to all aspects of evaluation and assessment.

C,D,J,K,L,M

35. Horrocks, John E., Assessment of Behavior, Merrill (Columbus), 1964.

Textbook designed for a course in psychological measurement. Includes application, background,and underlying assumptions of measurement; materials on measurement of personality, maturation and readiness, intelligence, achievement, aptitude and special abilities, social behavior,and interests and attitudes.

B,K

36. Jahoda, Marie, et al., Research Methods in Social Relations, Dryden (New York), 1951.

Textbook dealing with all the steps in the research process used in the study of social relations. Book is divided into two parts: one deals consecutively with major steps of scientific inquiry; the other deals in more technical detail wtih methodological problems.

M

37. Jennings, Helen H., Sociometry in Group Relations (2d Ed.), American Council on Education (Washington), 1959.

Revised and expanded volume on the meaning of sociometric structures and choices.

A,B,F,H,J,K,L,M

38. Kerlinger, Fred N., Foundations of Behavioral Research, Holt (New York), 1965.

A thorough treatment of techniques of educational and psychological inquiry, with special attention to the relationship between the problem and the design and methodology of its solution. Many practical applications are presented.

39. *Koenker, Robert H., Simplified Statisitics, McKnight (Illinios), 1961. Paperback.

A

40. *Kowitz, Gerald T., Research for Educational Improvement, State Education Department (Albany), 1960. Pamphlet.

C,D,E,F,G,K

41. *Lien, Arnold J., Measurement and Evaluation of Learning: A Handbook for Teachers, Brown (Iowa), 1967.

A thorough presentation of types of measurement and evaluation as they apply in the classroom setting.

B,C,D,E

42. Lindquist, E.F. (Ed.), Educational Measurement, American Council on Education (Washington, D.C.), 1963.

An indispensible reference work and handbook to measurement specialists, test constructors, research workers in education and psychology, and school administrators in charge of local test programs.

E

43. *Mager, Robert F., Preparing Objectives for Programmed Instruction, Fearon (California), 1962. Paperback.

Refreshing book for teachers, describing how to specify educational objectives. Provides both a valuable approach to the task of goal specification and an orientation which views goal specifications as an unavoidable, practical problem requiring hardheaded solutions.

A,B

44. *McAshan, Hildreth H., Elements of Educational Research, McGraw (New York), 1963.

Easily readable, introductory work on research techniques for use by teacher and education administrator. Practical book rather than theoretical.

M

45. *Northway, Mary, A Primer of Sociometry, University of Toronto (Canada), 1952.

Introductory work giving the basic principles and practices of sociometry for the study of social relationships. A basic bibliography is given to guide the reader in this intricate and complex field.

D,F

46. *Odell, Charles W., How to Improve Classroom Testing, Brown (Iowa), 1953.

Practical, nontechnical guide for teachers in the construction and administration of informal or homemade tests. Work based on the author's four decades of teaching experience.

C,D,E

47. Payne, David A., and McMorris, Robert F. (Eds.), *Educational and Psychological Measurement: Contributions to Theory and Practice*, Ginn (Boston), 1967. Paperback.

Book of readings presenting a broad perspective of theoretical and practical considerations in measurement.

48. Rothney, John W.M., "Evaluating and Reporting Pupil Progress," National Education Association, *What Research Says to the Teacher*.

A,F

49. *Siegel, Sidney, *Nonparametric Statistics for Behavioral Sciences*, McGraw (New York), 1956.

Presents nonparametric techniques in a form that can be understood by the average behavioral scientist who lacks advanced mathematical training. Emphasis on research application of techniques with many interesting examples taken from the behavioral sciences.

E

50. Smith, Eugene R., and Tyler, Ralph W., *Appraising and Recording Student Progress*, Harper (New York), 1942.

Detailed report on the steps to be taken to help schools discover, record, and report the progress of students toward the whole range of goals.

F

51. *Smith, G. Milton, *A Simplified Guide to Statistics*, Holt (New York), 1962. Paperback.

B,C,D

52. Stanley, Julian C., *Measurement in Today's School* (4th Ed.), Prentice (New York), 1964.

General reference book concerned with the theory and practice of measurement. Emphasis on the many problems relating to the intelligent use and interpretation of measurement by the classroom teacher and school administrator.

F

53. Tate, M., *Statistics in Education*, Macmillan (New York), 1955.

D,E

54. *Taxonomy of Educational Objectives*, Bloom, B.S., et al., Longmans (New York).

Handbook I: Cognitive Domain, 1956.

Describes the nature of the cognitive domain and its relationship to educational goals. Includes a description of the stages of the hierarchical structure and relates educational objectives to testing.

Handbook II: Affective Domain, 1964.

Describes the nature of the affective domain and the classification structure prepared for it. Describes the evaluation of a affective objectives at each level of the structure.

C,D,E,F

55. Thorndike, Robert L., and Hagen, Elizabeth, Measurement and Evaluation in Psychology and Education (2d Ed.), Wiley (New York), 1962.

Textbook with express aim to provide a foundation for persons who will use and interpret tests; defines the objectives of measurement and the value of teacher-made tests. Includes a discussion of new tests. Easy-to-read coverage of educational and psychological measurement.

56. Torrance, E. Paul, "Creativity," National Education Association, What Research Says to the Teacher.

A,H,J,K

57. *Travers, Robert M.W., An Introduction to Educational Research, Macmillan (New York), 1958.

Basic text discussing the aims and methods of educational research. Includes an explanation of how research should be conducted, the content and selection of research problem, some points of evaluation, and the validity of measurement.

C,G,H,J,K,L

58. Traxler, Arthur E., Techniques of Guidance, Harper (New York), 1945.

Practical guide giving the techniques and procedures available for the all-important job of counseling with explanation of tests and other instruments of evaluation.

F

59. Walker, Helen M., and Lev, Joseph, Statistical Inference, Holt (New York), 1953.

Good reference book on statistical theory and methods for the non-mathematically oriented student.

F

60. Wandt. Edwin, A Cross-Section of Educational Research, McKay (New York), 1965.

Collection of forty educational research articles published in journals in 1960 to 1964. The primary purpose is to acquaint administrators and teachers with recent research findings of practical application.

F

61. Winer, B.J., Statistical Principles in Experimental Design, McGraw (New York), 1962.

C,D,E,G,H,J,K,L,M

62. Wrightstone, J. Wayne, Justman, Joseph, and Robbins, Irving, Evaluation in Modern Education, American Book Company (New York), 1956.

Presents many of the problems which may arise in educational evaluation, suggests solutions. Includes samples of several types of assessment devices.

AERA PRESESSION COURSE III
CURRICULUM RESEARCH AND EVALUATION
FEBRUARY 11-15, 1967

THE INGREDIENTS OF THE RESEARCH PROPOSAL

SOUTHWEST REGIONAL LABORATORY
FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

1000 EAST APACHE BLVD.
TEMPE, ARIZONA 85281

11300 LA CIENEGA BLVD.
INGLEWOOD, CALIFORNIA 90304

COPYRIGHT 1967

TOPIC: The Ingredients of the Research Proposal

SESSION NUMBER: 18

INSTRUCTOR: Robert L. Baker

OBJECTIVES:

1. Identify the basic components of a sound research proposal, irrespective of variation in proposal format.
2. Describe the conditions that must be met for each component.
3. Distinguish between exemplars and non-exemplars of proposal components based on conditions to be met.
4. Given a problem area, construct a proposal outline including the operational specification of essential ingredients.

CONTENT OUTLINE:

I. Proposal Formulation and Planning

II. Description of Basic Components of a Sound Research Proposal
   A. Differences in labels attached to components in varied proposal formats.
   B. Differences in ways of sequencing and/or organizing components in overall proposal structure.

III. The Conditions That Must Be Met for Each Basic Component of a Sound Proposal

OBJECTIVE 6: Identify the essential components of a sound research proposal and describe operationally the specific conditions that each component must meet.

The increased financial support of educational research activities by government agencies and privately endowed foundations provides wider opportunity for the conduct of sorely needed educational research. The increase in funding, however, has been outpaced by the number of research proposals submitted for consideration by the funding sources. In a competitive research market, the weak, infirm, or poorly stated proposal is quickly cast aside. Thus, the educational researcher to work his trade must, in addition to his other skills, acquire competency in the development of a sound and well-explicated research proposal. Despite the vindications of the rejected researcher, most propoaals are rejected not because of the researcher's lack of sophistication regarding the complex subtleties of "grantsmanship", but rather because his proposal lacked one or more of the essential ingredients of a sound research proposal.

The purpose of the sessions related to Objective 6 is to describe the essential ingredients or components of a research proposal and to identify the conditions that must be met for each component. The components can be identified in any good research proposal regardless of the variations of format. They can be easily identified in proposals which attach different labels to the components or specify different ways of sequencing and/or organizing the components in the overall proposal structure.

The basic ingredients described in this session should be regarded as a necessary but not sufficient condition for the development of a sound and well-explicated research proposal.

THE BASIC COMPONENTS OF THE RESEARCH PROPOSAL

I. Proposal Formulation and Planning

A. Formulation of research problem

The first stage in the formulation of a research project is the selection of a fruitful problem that is significant for education. The range of potential problems or situations requiring change is as broad as the range of behaviors related to educational activity. The significance of a problem rests on its probable contribution to knowledge. The following are some of the important criteria which should be carefully considered in the selection and/or formulation of a research problem.

Suggested Criteria for Selection of Research Problems*

1. A concern with basic concepts and relationships of concepts as distinguished from local, particularized, or exclusively applied research, to the end that the knowledge produced may be cumulative with that from other studies.

2. The development, refinement, and testing of theoretical for formulations.

3. Superior research design, including careful specification of the variables involved and use of the most precise and appropriate methods available.

4. A probable contribution to methodology by the discovery, development, or refinement of practicable tools, techniques, or methods.

5. Full utilization of relevant concepts, theories, evidence, and techniques from related disciplines.

6. The integration of any single study in a planned program of related research to the end that the results become meaningful in a broad context.

7. Adequate provision to train additional research scientists.

8. Provision, wherever feasible, to repeat or check related research of other persons in order to provide a check on the generality of conclusions.

---

*From Report of the Study for the Ford Foundation on Policy and Program, Detroit, Michigan: Ford Foundation, November, 1949

B. Planning the research proposal

Planning of the research proposal represents the next step in the proposal-writing sequence.

Before such planning begins, it is assumed that the researcher (1) has made the necessary canvass and review of relevant background literature and (2) that he has formulated the research problem and determined the sequence of operations and procedures for solving the problem. He is now ready to describe his research procedure and his findings and to correlate them with the findings of other researchers and with theory in his field.

1. First considerations in planning a research proposal

   a. Determination of appropriate funding agencies for proposal research.

   b. Determination of selected funding agency's research proposal format.

   c. Consideration of length and detail of proposal.

   d. Getting the overall problem clearly in mind (consideration of the major aspects of the problem in light of the hypotheses that will guide the research).

   e. Consideration of what is directly and immediately pertinent (i.e., what should be included in the proposal) and what is of secondary concern and should be omitted or placed in an appendix.

2. Outlining--The Organizational Plan

   a. Outline form

      The outline for the research proposal shows (1) the sequence of topics as they will be covered and (2) relationships between the various topics. A good logical outline aids both the reading and the writing of the research proposal.

      In outlining, logical organization can usually be facilitated by coding the divisions of the outline. The two most frequently employed codes for sections or categories of the outlines are (1) the use of numbers and letters and (2) the use of a decimal system. These are illuminated on the following page.

Numbers and Letters System	Decimal System
I.	1.0
II.	2.0
A.	2.1
B.	2.2
III.	3.0
A.	3.1
1.	3.11
2.	3.12
B.	3.2
1.	3.21
a.	3.211
b.	3.212
2.	3.22
C.	3.3
1.	3.31
a.	3.311
(1)	3.3111
(2)	3.3112
b.	3.312
2.	3.32
IV.	4.0

Either a topic outline or a sentence outline may be employed, but in either case it is important to remember that labels or headings for each section must be clear and meaningful.

b. Logical division

Principles of logical division should be followed in outlining. Chief points to remember are:

(1) Each class or topic included in the outline should be based on a single principle of differentiation.

(2) Each division in the outline should be mutually exclusive.

(3) Each class or division in the outline should be exhaustive.

(4) Each class should be well defined.

(5) There should be no further division of a class unless there are at least two subclasses.

c. A suggestion for outlining a research report

Educational researchers frequently find that the use of a topic card system facilitates the organization and integration of material for the research proposal. Each topic or item that seems suitable for inclusion in the proposal is written down on a separate card.

A topic-card should be prepared for each point that is relevant, regardless of whether it is of major or minor importance. Following the preparation of the topic card, each card should be checked against the criteria for the basic components of the proposal to eliminate cards that are not pertinent and to prepare new cards for topics that may have been omitted or overlooked.

Then, the topic cards may be classified and organized, following the rules of logical division--putting topics together that belong together, arranging the topics that are coordinate and those that are subordinate, and so on. In this process it may be convenient to spread the cards out on the floor and arrange the cards in outline form. New cards may be inserted where they seem to be necessary, or cards may be eliminated if they are not pertinent in the total picture.

After an effective order has been arrived at, the cards may be coded (using either the number and letter code or the decimal code noted before) and the material copied to provide the working outline.

The procedure is a very flexible one, making it convenient to add cards, subtract them, combine topics, revise the order, etc.

II. Basic Components of a Research Proposal

A. Introduction

A well-explicated and technically sound research proposal contains a number of basic components that can be easily identified independent of variations in proposal formats. Different funding sources may require that different labels be attached to these components or they may specify different ways of sequencing and/or organizing the components in the overall proposal structure. The following constitutes a listing of the basic components of sound proposals:

1. Project Identification (Title)

2. Statement of the problem to be solved or situation to be improved.

3. Justification for proposal approach

4. Operational research objectives, hypotheses and/or questions

5. Sequence of operations and procedures to be used in solving problem.

6. Evaluation of data.

B. Description of the basic components of a research proposal

The elements or conditions to be met for each component includes the following:

1. Project Identification (Title)

   A good project title consists of a short concise statement containing the following elements:

   a. Identification of variables

      (1) Experimental study

         (a) Independent variable

         (b) Dependent variable

      (2) Correlational/status study

         (a) Related variable

         (b) Outcome

   b. Identification of target population

   c. Specification of type of relationship between variables

      (1) Functional = "the effects of"

      (2) Non-functional = "the relationship of"

2. Statement of the problem to be solved or the situation to be improved

   This component of a sound research proposal contains the following elements:

   a. Specification of the problem

      (1) Clear, brief statement of the problem with concepts defined where necessary, including:

         (a) Identification of manipulable instructional variables for determination of their differential effects. (All relevant variables should be considered. The failure to consider relevant variables is a common and serious error in development of a research proposal.)

         (b) Identification of dependent variable

(c) Identification of target population.

(2) Problem is delimited to bounds amenable to treatment or test.

(3) Description of the significance of the problem for education with reference to one or more of the following criteria:

   (a) Is timely.

   (b) Relates to a practical problem.

   (c) Relates to a wide population

   (d) Relates to an influential or critical population.

   (e) Fills a research gap.

   (f) Permits generalization to broader instructional principles or general theory.

   (g) Sharpens the definition of an important concept or relationship.

   (h) Has many implications for a wide range of practical educational problems.

   (i) May create or improve an instrument for observing and analyzing data.

   (j) Provides opportunity for gathering data that is restricted by the limited time available for gathering particular data.

   (k) Provides possibility for a fruitful exploration with known techniques.

As pointed out by Smith (1965), it is apparent from the Research Advisory Committee's reaction to proposals, that it views some problems as central to the field of education and others as peripheral. Studies which explore the learning process, or which seek to identify factors associated with the retention of students in schools and colleges are regarded as having greater significance than, for example, studies of adjustment problems of young adults. The latter topic may be a valuable one for research in another context such as mental health. The committee, however, must make judgements only about the significance of each problem to the field of education.

b. Specification of relationship to theoretical framework (if pertinent)

(1) Describe the relationship of the problem to a theoretical framework.

(2) Demonstrate the relationship of the problem to previous research.

(3) Present alternate hypotheses considered feasible within the framework of the theory (strong inference).

3. Justification for proposed approach

An important criterion in the evaluation of submitted proposals by funding agencies is the potential cost-effectiveness of a particular proposed research project. Cost-effectiveness indicates that there is a relationship between the cost of the proposed project and the results that are likely to be produced by the study (i.e., the effectiveness of the project). The proposal will be competetive with other proposals to the extent that the results which are likely to be produced are sufficient to justify the cost.

4. Operational research objectives, hypotheses and/or questions

The objectives, questions and/or hypotheses presented in the research proposal represent the researcher's attempt to focus his attention on specific aspects of a problem. As Smith (1963) points out, the sharper the focus, the greater the probability that the experimenter will succeed in his task. A statement of the objectives, hypotheses, or research question which is broad and ambiguous will ultimately lead to conclusions which are also broad and ambiguous.

The following is an example of a statement of a hypothesis included in a proposal submitted to the Cooperative Research Program. "The broad hypothesis is that a procedure can be followed which will lead to the initial formulation, revision, and final development of a broadly conceived theory of education based upon psychological and other relevant research findings." It is apparent that, stated this way, a research objective, question, or hypothesis will have little or no meaning. To assure that the proposal is presented in sharp forms, it is necessary to state the hypothesis, objectives or questions in operational terms--that is, the procedures and/or behavioral outcomes must be clearly specified and observable.

a. Operational definition

The necessity for operational definitions in the formulation of the research objectives, hypotheses and/or questions has been long emphasized in the literature. An operational definition requires that the observable conditions necessary for a concept's application be stated. The concept is thus defined by the set of operations linking it to the conditions of observation. One should be cautioned, however, against assuming that an operational definition can be taken as final. Willower (1963) points out that, although most psychologists agree that IQ provides an operational definition of intelligence, this argument should not result in a failure to devise newer and better measures of intelligence, not in a moritorium on development of new theories of intelligence.

The researcher must also carefully assess the scope of his operational definitions since narrowness can often be the price of precision in the formulation of a research objective. Without question the property of objectivity, which is afforded by operational definitions, is an essential requirement of scientific research. However, operational measures which omit too much or perhaps something crucial, have limited value. Operational definitions, as pointed out by Finan (1962), when properly used are a tool of theoretical research. Their purpose is to make concepts unambiguous, not to make it possible to theorize without concepts.

b. Objectives

The objectives component of a proposal provides a frame of reference for the evaluation of the remainder of the proposal. In this section the research objectives must be specified in terms of observable behaviors to be performed by the learner.

The objectives statement should include: (1) an operational specification of what individuals in the target population will be able to do upon attainment of the objectives; (2) a description of the conditions or situations in which the presence or absence of the behaviors can be observed and recorded; and (3) specification of the anticipated or acceptable level of performance for the target group. To minimize a broad ambiguity and conceptual confusion, a non-overlapping, simple taxonomy of behavioral objectives should be used.

c. Hypotheses

(1) Form of hypotheses

Hypotheses are relevant to theoretical research. Thus, when a hypothesis is stated, it is essential to provide a thorough explanation of the theoretical framework or basis that leads to the hypothesis. If the theoretical framework cannot be stated, it is not appropriate to propose hypotheses but rather to pose research questions. This is particularly true in the event that the inquiry is directed in an area in which the experimenter is relatively unsophisticated.

Research hypotheses take either one of two forms: (1) the null or statistical hypothesis; (2) the alternative or experimental hypothesis. The hypotheses can be presented as Guba (1963) points out, in four different kinds of statement including:

(a) Literary null: a "no-difference" or "no-effect" of the hypothesis expressed in terms of theoretical constructs.

(b) Operational null: a "no-difference" form of the hypothesis expressed in terms of the operations required to test the hypothesis.

(c) Literary alternative: a form expressed in terms of theoretical constructs that state the hypothesis that will be accepted if the null hypothesis is rejected.

(d) Operational alternative: a form expressed in terms of operations that state the hypothesis that will be accepted if the null hypothesis is rejected.

The null hypothesis (or the statement of the hypothesis in a "no-difference" form) is the most commonly used mode of phrasing the hypothesis. This form of the hypothesis is semantically difficult, particularly if more than one independent variable is included in the study. Statisticians, however, prefer this form of the hypothesis because it accurately reflects the probablistic models underlying the statistical techniques. The alternative or experimental hypothesis is simply a atatement of the hypothesis the researcher proposes to accept if the statistical hypothesis is rejected. The alternative hypothesis specifies the anticipated outcome, i.e., a non-chance occurrence. Either the null or alternative form may be used alone at the experimenter's discretion. However, as a matter of convention, the null hypothesis is customarily given with the accompanying alternative hypothesis.

Whenever there is a basis for prediction in the study, hypotheses should be stated as succinct predictions of the anticipated outcomes and/or findings rather than in the null form.

Both the null and the alternative hypotheses can be expressed in either of two language forms, i.e., literary or operational. If the language is in the literary form, the hypothesis will be expressed in terms of specific theoretical constructs. On the other hand, if the operational form is used, the hypothesis will be defined by the instruments used to measure the variables implied by a theoretical construct. In educational research, the operational form of the null and alternative hypothesis is preferable on two accounts: (1) it exposes the logic of operational techniques and measurement devices used in the study, (2) it minimizes ambiguity and conceptual confusion that frequently results in using the literary form alone without translation into operational terms.

(2) Criteria for evaluation of hypotheses

To assure the formulation of testable and significant hypotheses, the following criteria may be utilized:

(a) The hypotheses must be clearly stated in operational terms.

The null and alternate hypotheses should be clearly stated and include the operational specification of the concepts, independent and dependent variables and measuring devices employed in the study.

(b) The hypotheses must be specific and testable.

All the operations and predictions included in the hypotheses must be thoroughly and unambiguously defined in order to assess the testability of the hypotheses. As indicated by Goode and Hatt (1952), hypotheses are frequently stated in such general terms that they are simply not testable. By operationally specifying the hypotheses, the potential validity of the experimental results is increased. By using broad terms one is able to resort to selective evidence in the interpretation of the results. Although astrologists and palm readers make their living by stating predictions in such a form that almost any occurence can be construed as prophecy fulfillment, such a strategy is not legitimate in educational research. As Goode and Hatt (1952) point out, the more specific the prediction, the smaller the chance that the prediction will actually be borne out as a result of a mere accident. It is imperative, then, that the research hypotheses be as explicit and specific as possible in order to avoid the trap of selective evidence.

(c) The hypotheses should be related to a body of theory.

This criterion is one that is frequently overlooked in educational research. In curriculum research it is valid to select a research problem which does not relate directly to previous curriculum research or theoretical formulations. The researcher should remember, however, that often with careful development, the same research study may not only obtain the desired information related to local needs, but may help to refute, qualify, or support existing instructional theories.

(d) Questions

Questions are relevant to status and correlational studies (i.e., How many are there? Is there a relationship between them?). The questions is also appropriate when, as is often true in educational research, the researcher cannot state the theoretical basis for the study. In this case, it is appropriate to raise questions rather than propose hypotheses. The same criteria of operational specificity apply to the starting of research questions as were mentioned in the discussion of objectives and hypotheses. The experimenter indicates by the specificity of the research questions he raises, how carefully he has thought through his problems. A research question of the form, "What is the relationship of intelligence to reading and arithmetic achievement?" is too broad and ambiguous. A better statement of the question would be, "What is the relationship of Otis Quick Test Intelligence Scores to the SAT Arithmetic and Reading subtest scores of seventh grade public school students?"

5. Sequence of operations and procedures to be used in solving problems

a. Introduction

This component of a research proposal is variously labeled method, procedure, or in one instance method of procedure. The basic function of this component is to describe the operations that will be performed to solve the provelm of concern, including:

(1) Specification of the operational evaluation-revision procedures that will be employed in the experiment. Often this is done by specifying sub-objectives of the overall experiment and indicating the empirical criteria that will be used to determine the attainment of each.

(2) Specify the sequence of steps to be taken toward the solution of the problem and a list of products that will be produced at the end of each step. A "product" may be a new workbook or a film; it may be a method of pupil-grouping, or the specifications of an instructional procedure, or a vocabulary list.

(3) Describe the method and rationale for sampling.

(4) Describe the method and rationale for treatment assignment.

(5) Specify the kinds of data to be collected, the method for collecting, and the rationale for using it.

(6) Describe the experimental design and the rationale for using it.

(7) Tell how the data will be analyzed.

b. Design

A common failing of many proposals is that they neglect or ignore some of the posed research questions or hypotheses. Thus, the first step of the researcher in selecting an appropriate design, is to check every proposed questions or hypothesis to be sure that it is covered by the design under consideration.

The researcher should be aware of all the possible threats to validity and should disclose in this section how and why the design selected constitutes an optimal design under the particular constraints imposed on the experiment (e.g., inability to randomly assign subjects to treatment, limited size of sample, etc.)

Although one should avoid expediency as a justification for a weak design, the researcher must convincingly demonstrate that, if a "true" experimental design is not feasible, the alternative design offered represents an optimal compromise based on (1) the extreme difficulty and/or cost of using a true experimental design for the proposed study; (2) the control of the variables selected; and (3) the control of possible sources of error.

A well-explicated presentation and justification of an experimental deisgn should include most of the following elements:

(1) Specification of how each research question or hypothesis is covered by the proposed design.

(2) Specification of how specific anticipated confounding variables and threats to validity are controlled by the proposed design including:

  (a) Identification of variables which design will control and how specifically design will control them.

  (b) If specific sources of error cannot be completely controlled by proposed design, submit rationale as to why they are not anticipated to constitute major threats to validity (e.g., if testing-treatment interaction remains as a threat to validity, indicate why such a threat is anticipated to have negligible effects. Cite supporting pilot study data if available. It is imperative that the researcher demonstrate his awareness of all possible courses of error by pointing them out. If the researcher does not point them out, he can rest assured that very likely the reviewer will do so.

(3) Specification of design in statistical or logical terms.

The use of statistical or logical terms in describing the selected design as Guba (1963) points out, will facilitate communication and the identification of possible sources of error in the experiment.

(4) Types of inferences that may be made using proposed design

As pointed out in earlier sessions, the type of study (i.e., experimental--non-experimental) determines the types of statements of casual inference that may be made from the data. The researcher should verify that the selected design will permit him to make the kinds of statements that he would like to make from the acquired data.

c. Target population and sampling

(1) Sampling plan

The target population and sample must be carefully described so that the reviewer can make an assignment of the generalizability of the experimental findings.

The problem of external validity, as discussed previously in the session on experimental design, relates to the problem of knowing the population to whom the findings are applicable. To validly generalize the experimental results to the target population requires that the sample have been drawn from that population using an appropriate probability sampling plan.

As Guba (1963) points out, two discrete steps are involved:

(a) Random selection of subjects from the target population, i.e., all subjects incorporated in the sample must be selected at random from the same population. This target population must be precisely defined.

(b) Random assignment of subjects to treatment.

The rationale for the selection of a given sampling plan must be carefully specified. If stratefied, area or cluster samples are used, the reason for selecting any of these plans must be made clear and reasonable to the reviewer.

(2) Sample size

The problem of sample size cannot be adequately treated here. It should be mentioned, however, that one can estimate the sample size required to obtain a apecified level of power if he has adequate pilot study data or informatinn from previous research using the same measurement devices.

(3) Specification of sampling procedures

It is necessary that the specification of the sampling procedure include at least the following elements:

(a) Description of target population, experimental and control samples

(i) Specification of target population to which the research objectives, hypotheses, or questions are relevant.

(ii) Specification of procedures or rationale for determining size of sample to be used

(b) Specificatinn of method of drawing or selecting sample

(i) Specification of relative costs of the various sizes and types of samples allowed by the theory

(ii) Specification of relative importance of Type I Error and Type II Errors

d. Data to be gathered and measurement devices to be employed

(1) Date to be gathered

At least the following information should be provided in this section:

(a) Specification of plans for collection of required data, including an explicity statement describing field controls to be employed. The major concern here is generally that you will maintain equivalent situations for all groups (Guba, 1963).

(b) Specification of the anticipated time schedule

(2) Measurement devices to be employed

(a) Description of all measurement devices to be used in study. If no adequate instrument currently exists, then it is necessary to specify in detail the procedures that will be used to develop an appropriate psychometric instrument.

(b) Description of measures of qualitative variables including citation of available reliability and validity data.

(c) Specification of rationale for selection of measurement devices including:

(i) Supporting evidence that the selected devices have the appropriate psychometric characteristics.

(ii) Defense of operational definitions used.

(d) Description of use to be made of pilot study or test run.

5. Analysis and evaluation of the data

The description of the data analysis and evaluation procedures should include the following elements:

a. Indication of consistency of method of analysis with research objectives and design.

b. Specification of method of analysis including:

(1) Use of special analytical tools, computer, card-sorter, etc.

(2) Use of graphic techniques

(3) Specification of types of tables to be constructed

(4) Specification of statistical and/or other analytical procedures to be utilized.

c. Indication of the type of statements that may be validly made from analyzed data.

REFERENCES

Finan, John L. "The System Concept as a Principle of Methodological Design"in Gagne, Robert M, *Psychological Principles in System Development*. New York: Holt, Rhinehart & Winston, 1962.

Goode, William J. & Hatt, Paul K., "Criteria for Judging Usable Hypotheses" in Delbert C. Miller, *Handbook of Research Design and Social Measurement*. New York: David McKay Company, Inc., 1964.

Goode, William J. & Hatt, Paul K., *Methods in Social Research*. New York: McGraw-Hill Book Company, 1952.

Guba, Egon G., "Guides for the Writing of Proposals" in Culbertson, Jack A., and Hancley, Stephen P. (eds.) *Educational Research: New Perspectives*. Danville, Illinois: Interstate Printers and Publishers, Inc., 1963.

Smith, Gerald E., "A Critique of Proposals Submitted to the Cooperative Research Program" in Culbertson, Jack A., and Hencley, Stephen P. (eds.) *Educational Research: New Perspectives.* Danville, Illinois: Interstate Printers and Publishers, Inc., 1963.

Smith Gerald E., "How to Write a Project Proposal." *Nation's Schools.* Vol. 76, No. 2, August 1965.

Willower, Donald J. "Concept Development and Research" in Culbertson, Jack A. and Hencley, Stephen P. (eds.) *Educational Research: New Perspectives.* Danville, Illinois: Interstate Printers & Publishers, Inc., 1963.

THE INGREDIENTS OF A RESEARCH PROPOSAL

Exercise 1

A. Discrimination of Good Proposal Titles

For each of the following project titles, indicate whether:

(1) The variables are clearly specified. If so, identify the variable (independent, dependent, etc.)

(2) The target population is identified.

(3) The type of relationship between the variables is correctly specified.

Examples:

1. The effects of a specially planned mathematics program on pupil achievement in eighth grade mathematics.

2. Reading comprehension, abstract verbal reasoning, and computation as factors in arithmetic problem solving.

3. An analysis of the relationship of selected factors to the nature of the voluntary reading of adolescents.

4. The dynamics of two variants of classroom alienation.

5. The relationship between achievement and verbal communication of secondary school children.

6. The effects of anxiety and intelligence on concept formation.

7. A study of concept learning and generalization in children.

8. The effects of four instructional procedures on free operant discrimination and discrimination reversal in retardates.

9. An investigation of the effects of two schedules of reading instruction on manifest anxiety and behavior adjustment: A comparison of varied amounts of time devoted to reading instruction and their effects on level of manifest anxiety and school behavior adjustment among fifth and sixth grade children in a public school setting.

10. The relationship of certain administrative factors to the number of academic courses pursued by the academically talented students in the 1960 graduating classes of the public secondary schools of Delaware.

11. The relationship between socio-economic status and problem solving ability: a study of the influence of experience.

12. The relationship between the perceived emotional climate of the home of college students and certain variables in their functioning related to self-concept and academic functioning.

B. Construction of a Proposal Title

For each of the following examples, construct a project title that satisfies the criteria for a good title.

1. A decision regarding the adoption of the PSSC physics course of study will be made from results of an evaluation of the course. Four schools can be involved in the study but no manipulation of enrollment into classes will be allowed. Each school will have at least two classes in Physics. Two of the four teachers can teach both PSSC and traditional but the other two can teach only traditional physics.

2. A retention study is to be made with students who took BSCS Biology. About 750 sophomores (approximately 86 from each of 9 schools) took BSCS and are still in attendance as juniors. Data are available on these students and an equal number of sophomores who took traditional biology.

3. An investigator wishes to determine the effect of reading "My Six Convicts" has upon freshmen Sociology majors at College X in terms of attitudes toward prisoners. He is able to use all the sections of Introductory Sociology offered in the first semester. He has an appropriate measure of attitudes toward prisoners.

4. A community committee wishes to discover what effects double sessions have on the quality of education of children in one of the crowded schools of their district. The bond issue has failed and they know they must have the pupils on double session for at least a year, but would like relevant information for publicity for future bond issue elections. The district has regular achievement and I.Q. testing programs in it's schools. What experimental design might be employed to gather this information.

Exercise 2

Below you will find three sections of a research proposal. Read it.

Project Title

The effects of Use of Sequencing and Mastery Principles in Film Preparation on the Concept of Formation and Procedural Performance of High School Students.

Problem

The potential of 8mm silent cartridged film has captured the imagination of educators and film producers alike. The number of commercially available cartridged films is increasing at an expoential rate, portending the increased utilization of the motion picture as an instructional medium. Since the low cost of 8mm eliminates the most serious obstacles to local production of instructional films, greatly expanded activity in this area may also be anticipated.

To date this technology has developed almost completely independently of previous and concurrent development in the psychology of learning and the technology of instruction. Consider the terminology which has already become standard in 8mm usage. Though nearly all commercially produced 8mm cartridged films are called "single-concept films," the definition of the term concept (as inferred from the characteristics of these films) lacks the precision that the term has achieved in psychological experimentation. Just as film producers might profit from a study of the meaning of the term concept as it is employed by psychologists and educational researchers, so the burgeoning 8mm field can profit from an application of principles of learning and instructional technology to the production of its increasingly popular product.

The present proposal seeks to extend the applicability of two of the dominant principles that have grown out of controlled experimentation in programmed instruction to the production of 8mm silent cartridged films. These are the principles of sequencing and mastery. (Silberman, H., Coulson, J., Melaragno, R., and Newmark, G., 1964; Schutz, R.E., Baker, R.L., and Gerlach, V.S., 1964)

The principle of sequencing has two parts: (1) every skill and subskill included in the program objectives should be explicitly covered by the program unless it exists in the student's entry repertoire; and (2) any materials that do not contribute to the program objectives should be eliminated.

The principle of mastery states that the student should be required to demonstrate mastery of each eomponent subskill before he is allowed to advance to new topics based on the earlier material.

These two principles will be investigated using two distinctive types of films as vehicles: (1) films designed to achieve concept fromation (the development of a new concept as opposed to the use of a concept already within the student's repertoire {Travers, 1963, p. 127}); (2) films designed to develop procidural performance (motor behavior as opposed to cognitive behavior). It would appear that characteristics inherent in the motion picture medium render it uniquely superior to the textual medium in accomplishing both of these types of instructional objectives.

Related Research

Experimental studies have been inconclusive with respect to the variables that influence the instructional effectiveness of motion pictures. The findings do suggest that certain general aspects may have important implications when preparing film sequences. However, a fine-grain analysis of the influencing variables is still necessary to provide the precisions required for effective instructional control via the motion picture.

Maccoby and Sheffield (1958) studied the optimal distribution of demonstration and practice in learning a procedural skill. They found that practice immediately following short segments of demonstration os better than deferring practice until a larger section of demonstration has been completed. The general aspects of the study are compelling; that is, there is some utility in breaking the sequence into segments and in providing periodic practice on route. However, specifications providing for learner response are imprecise from an instructional technology point of view. When one considers that the "segments" of the demonstration film were 5 or 6 minutes long, it is apparent that we are dealing with stimulus conditions which are extremely gross in the light of current instructional technology. A much finer-grain analysis of the skills and subskills included in the objective and the nature and sequence of instructional stimuli is required.

Margolius and Sheffield (1961) studied the effect of different lengths of filmed demonstrations of complex behavior sequences before an active practice response was made. The treatments included: (1) short demonstration, then practice; (2) longer demonstration, then practice; (3) complete demonstration, then practice; and (4) a transition from short demonstration, then practice, to long demonstration, then practice. Although inconclusive with respect to establishing specifications of demonstration length, the aspect of active responses on route appears to warrant more extensive investigation. Again, extending the principles of sequencing and mastery will contribute to the precision necesaary for specifying optimal demonstration lengths and organization.

One method of breaking a lengthy serial mechanical-assembly task into units has been suggested by Margolius, Sheffield, and Maccoby (1961). They define a "natural" unit as being contextually similar, and further emphasize practice on the "natural" units rather than

POOR ORIGINAL COPY - BES
AVAILABLE AT TIME FILMED

on the whole. Although procedural cues for specifying contextual homogeneity were not established, the general strategy warrants further, more definitive investigation.

The results of these experiments, as well as other similar studies (Michael and Maccoby, 1961), reflect the potential productivity of greater experimental activity in this area. The general findings of these studies suggest gross definitions of the instructional conditions which accompany effective film instruction. Such findings provide little in the way of generalizable procedures. Greater experimental control in the systematic application of empirically derived principles of learning should help us to get beneath the surface description of instructional conditions and specify the procedural cues for developing instructional strategies related to the development of 8mm films.

Objective

To investigate the application of the principles of sequencing and mastery to the preparation of 8mm silent films designed to achieve concept formation and procedural performance objectives.

Now answer the questions below, using the following procedure. If the answer is yes, state your reason or else underline (in the sections above) the words on which your answer is based and place the number of the question in the left margin, next to the wotds you have underlined. If your answer is no, either state why or rewrite the pertinent portion of the proposal to meet the criteria implied in the question.

1. Are the variables and type of relationship between the variables described? If yes, identify the variables (e.g., independent, dependent), type of relationship between the variables.

2. Indicate whether this would be a correlational, status or experimental study.

3. Is the situation requiring change described? If yes, specify briefly.

4. Is the target population described? If yes, specify briefly.

5. Specify what, if any, observable criteria will be used to determine when the desired change has taken place.

6. Is the problem related to a theoretical framework? If so, specify.

7. Are big definitions included?

POOR ORIGINAL COPY - BEST
AVAILABLE AT TIME FILMED

8. Is the objective in the example stated in operational terms? If not, how specifically might it be modified so that it does comprise an operational statement.

9. Is the problem of general, or opposed to local significance?

Exercise 3

Construct Proposal Outline

Using one of the following problem areas or a problem area of special interest to you, construct a proposal outline using all of the criteria for a well-explicated proposal.

1. A doctoral candidate is interested in the Zuni Indican culture. What he would like to do is to make a study of an Indian child of elementary school age. In this study he specifically intends to investigate the child's family background--habits, mores, education, attitudes--as it impinges upon this student. By studying the child and its background, this doctoral candidate hopes to learn a great deal not only about the ways and means for the elementary school to educate the Indian child.

2. Your school district has been using a team teaching approach in ninth grade English for three years in each of eight high schools. The superintendent wished to know whether team teaching results in any greater learning than a traditional approach. He makes the resources of the Research Director available to you to use ninth grade students in a nearby high school. These students are being taught ninth grade English by the traditional approach. The experiment is to run during the school year 1964-65.

3. An investigator wants to see if the development of personality problems in first graders.A large school district with 10 elementary schools, each having the first four grades, is willing to cooperate. Pre-school reading readiness tests are administered each year and first grade classes are made up heterogeneously on the basis of these scores--Investigator free to work within this framework.

4. The senior students in high school were not doing as well as some people thought the students should be doing on their composition tests. It was decided to increase grammar content in the English curriculum. Someone questioned the reason for doing this. Therefore a study was planned to find out if increasing the grammar content would have any effect on composition grades. To aid the teachers engaged in the study all the senior English classes will be offered the same period next year. What design would you use?

POOR ORIGINAL COPY - BEST AVAILABLE AT TIME FILMED

TESTING HYPOTHESES: A PLEA FOR ORDER IN EDUCATIONAL RESEARCH

Joe L. Saupe
Michigan State University

Recently, as I was making my first try at teaching a course in educational statistics, it became clear that in the process of confusing my students I had suceeded in confusing myself regarding the proper roles of problems, research hypotheses, and statistical hypotheses in educarional research. My pet peeve regarding research in education, or is any other of the social sciences for that matter, is that all too often, research reports make too much of the null hypotheses. The epitomy of this glorification of the null hypothesis is its statement in the first chapter of a doctoral dissertation. I suspect that this over-emphasis of the null hypothesis results from the fact that either the student, his major professor, or both, once took a course in statistics -- a course of action which I cannot criticize in itself. Unfortunately, instructors of statistics courses and authors of statistics textbooks are usually more concerned with the logic of statistics, in which the null hypothesis is rightfully central, than with the logic of using statistics in educational research.

This may be a minor point to some. Where the null hypothesis is stated may not affect the data analysis or possibly even the conclusion of the research. But it is a major point with me. The logic of the use of the techniques of statistical inference is involved.

In my feal to differentiate between research and statistical hypotheses for my students and to point out that null hypotheses are only statistical devices which permit the "proving" of research hypotheses, I emphasized that the research hypothesis was the one to be stated in Chapter I. Eventually, a Thoughtful student asked, "But what if we don't have any basis for developing a research hypothesis to state in Chapter I?" At this point I backed into a corner and mumbled something about a problem as opposed to a hypothesis. It is from this corner and the perspective it gave me that I attempted to think through the issues involved in the relation of statistical inference to educational research. I am sure that what I have to say has been said many times and many ways, but I want to say it again in my way in hope that this way will contribute to an orderliness in the logic involved in educational research and its reporting.

Hypotheses and Problems

I would like to suggest that basically there are two types of research for which the tools of statistical inference may be useful. The first I shall call Hypothesis Research, which, of course, invloves a problem in a larger sense of the word. If, in an area of investigation, there is a backlog of knowledge or tested theory which when slightly extended suggests a hypothesis for further investigation, or if the researcher develops or borrows what is, to him at least, a reasonable theory suggestive of one or more hypotheses, we have a basis for hypothesis research. Note carefully that such hypotheses usually (I'll comment on the exception later) take the form of some positive statement about the relationships among a set of variables defined with regard to some population of individuals, objects, or events. Examples of research hypotheses are: "Students learn more under teaching method A than under teaching method B," "Self-perception is related to school achievement," "Authoritarian students are more likely to be school leaders than non-authoritarian ones," "Schools with democratic administrations are more likely to be adaptable than schools with authoritarian or laissez faire administrations." While these hypotheses are not likely to be acceptable ones for thesis research because they lack the necessary qualifications and operational definitions, they should make the point. In hypotheis-type research, these are the hypotheses which should guide the research and which, therefore, should be stated at the outset of the research report or dissertation in conjunction with the presentation or review of the theory on which they are based.

Two characteristics of such research hypotheses are worthy of note. First, the word "significant" does not appear in them. A research hypothesis that states, "There is a significant difference...," is really beside the point. It confounds the actual research hypothesis with the statistical hypothesis and thereby confuses the issue of using statistical inference as a tool of research. That "there is a signaficant difference...." is an acceptable, though not completely articulate was of stating a conclusion, but it never provides a meaningful statement of a hypothesis.

The second characteristic of research hypotheses is that they usually specify a direction. If a body of theory or past research is the basis for a hypothesis, then the specific nature of the difference or relationship involved may usually be specified. Which of two teaching methods should prove superior is indicated or the sign of a relevant correlation specified. Ordinarily, if the theory does not suggest a direction for the hypothesis, the theory is incomplete regarding the hypothesis and only a problem (see below) exists. For thoses who are familiar with the terminology of statistics, I am saying that most research hypotheses are directional and hence call for "one-sided" or "one-tailed" statistical tests, but I am getting ahead of myself.

The second type of research for which the methods of statistical inference are apprpriate I will call problem research. If there is no theoretical scheme which applies to an area of investigation or if the topic for study represents a sizable jump from such a body of theory, the researcher may then have no specific hypothesis concering the subject of his research. He has only a problem. He has no basis for guessing that there is or is not a difference between treatments or groups or relationship among the variables he chooses to study. It would then be out of place for him to attempt to formulate a hypothesis about the paticular piece of nature with which he is concerned. It is proper, of course, for him to state problems for investigation. Such problems may merely be declarations of what he intends to do. For example, he may set out "To study the responses of high ability students to personality measure X" or "To compare the behavior of males and females on vatiables Y and Z." Problems may also be stated as questions: "What are the attitudes of the voters of school system W regarding the place of vocational training in the school's curriculum?" or "What is the relationship among certain socio-economic variables and students' self-concepts?" or "Which is a better predictor of academic success, Test A or Test B?"

In problem-type research, the problem is the thing that guides the research effort. The problem, then, and not some artificial hypothesis should be clearly stated at the outset of the research report or in Chapter I of the dissertation. Research hypotheses have no logical place, no matter how they are stated, "null" or otherwise, in the formulation of this type of research.

I am saying, in other words, that hypotheses are not absolutely necessary for research, even doctoral research, to be respectable. While it is possible to argue that the significance (not statistical) of educational research can be measured by the extent to which it draws upon past research and a body of theory and contributes to it, it is still true that there is much virgin territory to be explored by educational researchers. The first study in an area cannot be guided by research hypotheses for further research efforts and thereby stimulate the development of a body of theory. Furthermore, some problem researchers may happen on to, by accident or design, relationships which suggest how some previously unconsidered theoretical scheme applies to the problem area or which provide for a basis of choice among possibly competing theories.

On the other hand, it is true that any hypothesis research is more likely (a statistical concept) to produce dividends on the store of knowledge than are many researchers of the problem variety. Some problems studied by educational researchers may have practical utility, but may lead nowhere in terms of a contribution to knowledge. Others may lead nowhere in any sense, but this consideration will not alter the proper rôle of statistical inference in their pursuance, which is after all the topic I have chosen to discuss.

Statistical Hypothesis

Statistics is an applied branch of mathematics. It has provided a body of knowledge and techniques which have been found quite useful in edicational research in making inferences -- based on probability and random samples -- concerning the populations from which the random samples were taken. The statistical hypothesis is a central part of the techniques of this branch of knowledge.[1]

In essence, the method involves the positing of some hypothesis (statistical) about the nature of the population from which a sample is to be drawn. (Clearly, the word "significant" does not belong in a hypothesis which is some positive statement about the nature of a population.) The sample is then drawn and observed. If it turns out to be quite atypical in terms of what samples from this population are expected to be like, the original hypothesis (statistical) may be subjected to doubt. If it is atypical enough, say belongs to that group of samples which are so unusual that we would expect them to be randomly drawn from the posited population only five times in one hundred samples, then we may say that we will reject the statistical hypothesis. If we play the game according to the rules, of course, we will state before we actually draw the sample how atypical it must be in order for us to reject the original statistical hypothesis. This is a priori definition of atypicalness is the matter of significance level and is expressed as a proportion, .05, .01, or .001. We say that our observed sample must be among the fifty or ten or one most unusual that would be expected to occur in drawing a thousand of them before we will reject the original hypothesis about the nature of the population.

---

[1] While I am talking about the statistical testing of hypotheses, I do not mean to depreciate the value of statistical estimation which is an important statistical method. The logic of estimation is very similar to the logic of hypothesis testing.

The rejection of a statistical hypothesis on the basis of an atypical random sample means that we are willing to behave as though the logical opposite of that hypothesis were true; that is, that the population is in fact of a nature different from the one we originally posited. In other words, we choose to believe that the sample is typical of, hence came from a population different from that originally posited.[2] We make this decision with a predetermined statement of risk; we know that in using this logic for rejecting statistical hypothesis we will be wrong five or one times in one hundred, for even the most atypical sample could conceivably come from the specified population.

Now, and this is important, the drawing of a "typical" sample which leads to the acceptance of the statistical hypothesis is not a logically sound basis for concluding that the specific statistical hypothesis we choose to examine is in fact true. The reason for this is that such a sample may actually be even more typical for any of a number of different populations which are very similiar to the one we elected to posit. In other words, the rejection of a statistical hypothesis is a stronger action than its acceptance.

---

[2] Modern statisticians have built their theories and techniques around "alternative" as well as "statistical" hypotheses about populations. This refinement is important in modern statistical theory but may be ignored for the simple purpose of this paper.

Now we can relate statistical and research hypotheses. If a researcher has a research hypothesis which he wants to "prove", his best strategy is to frame a statistical hypothesis which is its logical opposite and with all the objectivity, caution, and scientific detatchment to "disprove" that statistical hypothesis. (The words "prove" and "disprove" are put in quotation marks to indicate that they are used only in a probability sense.) Thus, when it comes time to analyze the results of his experiment, the researcher who developed the research hypothesis that students learn more under teaching method A than under teaching method B is wise to test the statistical hypothesis that teaching method B produces the same or more learning than teaching method A! If his results are sufficiently alien to this statistical hypothesis, he may conclude with his predetermined level of risk that teaching method A is superior to teaching method B. Q.E.D. That's what he wanted to show in the first place.

In problem research. the use of the statistical hypothesis is slightly different. Here the researcher merely selects a statistical hypothesis that appears to be relevant to his problem. Fortunately, in most cases, if the problem is defined with an adequate degree of specificity, he will find that there is really only one statistical hypothesis which is relevant to it. The teaching methods problem may be taken as an example. If there is no research hypothesis, the problem is to see if there is any difference between the effectiveness of methods A and B. The statistical hypothesis for this case is the "null" one that the two methods are equally effective. If our results are sufficiently inconsistent with this hypothesis, we reject it and conclude that they differ in effectiveness.

Under these circumstances even though the average achievement score for method A were 100 and for method B 20, we could, strictly speaking, conclude only that the two methods differed in effectiveness. We should then adopt the research hypothesis that method A is superior to method B and proceed to plan another experiment.

Hypothesis research thus generally leads to somewhat more precise conclusions than does problem research. In statistical terminology, one-tailed or directional tests of hypotheses provide more precise information than do two-tailed or non-directional tests. The choice between a one-tailed and a two-tailed test of a hypothesis does not depend upon the general level of caution or scientific detatchment of the researcher, but rather upon whether the nature of his research permits him to develop a (one-tailed) research hypothesis or a (two-tailed) problem.

The point of all this is that the statistical hypothesis comes into the picture with the statistical methodology. It is an integral part of this methodology which permits research hypotheses or problems to be examined in the most efficient manner. Thus the statistical or null hypothesis should be relegated to the data analysis section of the research report or to Chapter 111 or 1V, depending upon the form required by the advisor of the dissertation. As a matter of fact, the precise statistical hypothesis can just about always be inferred from the nature of the specific statistical procedures employed in the data analysis. For this reason, I am not particularly disturbed if the research report does not include a precise statement of the statistical hypothesis being tested.

Purists in educational research may, however, rightfully require that the researcher demonstrate that he understands what he is doing in applying the logic of hypothesis testing by including in the research report a precise statement of the statistical hypothesis.

SOME DIFFICULTIES

Unfortunately, the techniques of statistics permit only certain types of statistical hypotheses to be examined or tested. Allowable statistical hypotheses may be roughly classified in two categories. The first of these includes the common "null," no-difference, or no-relationship hypotheses. The other includes the difference-or relationship-in-one-direction types. It is clear from the foregoing section, then, that only two general types of research hypotheses or problems may be efficiently subjected to statistical examination. These logical opposites of the permissible statistical hypotheses are the difference- or relationship-in-either-direction situations (commonly the basis of problem research) and the difference- or relationship-in-the-other-direction situation (usually the basis of hypothesis research.) (In other words, statistical methods do not, as a rule, permit efficient examination of research hypotheses which are of the no-difference or no-relationship type.)

But there are some situations in which the proper research hypothesis may take the "null" form. The best example is the case of "testing assumptions" as a prerequisite for applying some other statistical technique. In the case of the "t-test" of the null hypothesis that two population means are the same or that one is the same or larger than the other, it is helpful if it is reasonable to assume that the two (normal) population variances are the same.

This research hypothesis is then a "null" hypothesis. Our only course of action in this situation is to test this same statistical hypothesis. If our sample data are sufficiently atypical--one sample variance sufficiently larger than the other--we must certainly reject that statistical hypothesis and behave, in applying the t-test, as though the population variances do in fact differ. On the other hand, if our data lead us to accept the hypothesis of no difference, we haven't really "proven" much of anything. Recall that accepting a statistical hypothesis is not a very strong decision. (The point is that in this case we can't "prove" what we want to "prove", namely, the null, research hypothesis. All we can say is that our data do not contradict that hypothesis, but this is not the same as saying that it supports it.)

There are other types of assumptions of the no-difference or no-relationship type which are required in the use of various statistical techniques. For none of these assumptions is there a very conclusive statistical procedure available. In practice, however, it may not matter, because in many situations it doesn't make too much difference if the assumptions are violated a little. If the population variances differ a little, the only effect of using the common t-test is that the significance level will not really be what we assume it will be. It may really be .06 instead of .05 and in a practical situation this is not a serious matter.

My advice then is that researchers continue to test assumptions in the usual, and only available, manner but that they recognize that in accepting the null hypothesis they are providing only a very crude conclusion. If the population differences are sufficiently large that the sample data lead to a rejection of the null hypothesis, they should not, as a rule, apply any statistical technique that is based on the assumption tested, because in this case they can infer that the significance level adopted for that technique may vary considerably from the one they would assume for it.

Another difficulty in the use of statistical techniques in educational research is that some of the techniques are appropriate only for the testing of null, statistical hypotheses. Directional hypotheses cannot, strictly speaking, be studied with these techniques. While such techniques are useful for problem research, their value for hypothesis research is limited. Two specific techniques may be mentioned as examples. First, the chi-square test of independence in contingency tables is sensitive to any source of departure from independence in the data, but cannot (except in the one degree of freedom case) appropriately be used to "prove" any specific source of dependence or any specific directional relationship. Similarly, the common analysis of variance method enables us to examine the statistical hypothesis that a set of population means are the same, but does not permit any very proper conclusions regarding which of the population means may be larger or smaller. To be sure, there are refinements and modifications of the fundamental analysis of variance procedures that are designed to permit directional inferences concerning population means, but these methods are approximations at best and do not alter the fact that the analysis of variance is basically a tool of problem research.

Summary

The point of what I have been saying can be summarized as follows: Positively stated research hypotheses or specific problems for investigation should be developed and stated by researchers in the early sections of research reports or theses. These hypotheses or problems are, after all, the things which provide guidance to the research. Furthermore, there is no reason for the researcher to try to state a hypothesis, if in fact he only has a problem to study. Problems are perfectly respectable concerns for research. The statistical hypothesis, if stated precisely at all, should be reserved for the data analysis section or chapter of the report. It is an integral part of the statistical tool and should not be separated from this tool. Elevating the "null" hypothesis to the outset of the report tends to place undue attention on the statistical techniques of the study. These techniques are merely tools and should not be allowed to overshadow the substance of the research.

COMPARISON OF EXPERIMENTAL AND EVALUATION STRATEGIES

	EXPERIMENTATION	EVALUATION
PURPOSE	To test research hypotheses	To facilitate the continual improvement of a program
SUBJECTS	Units to be measured are randomly assigned to treatment and control conditions	Subjects are assigned to a program based upon their needs and the purpose of the program rather than the requirements of the data collection and analysis designs
CONTROL	Treatment and control conditions are held constant throughout the experiment	Evaluation aims to stimulate improvement in on-going programs
INSTRUMENT ADMINISTRATION	Instruments are administered after a specified period of time--usually a year or sometimes pre and post to the experiment	Instruments are administered to conform with information requirements of decision makers throughout the program's existence
FEEDBACK	Avoided during the experiment so as to avoid contamination	An essential means for stimulating change
CRITERIA	Information should be: valid, and reliable	Information should be: valid, reliable timely, credible and pervasive

DEFINITION - 1

Definition of MEANS vary according to the ENDS to be served.

Evaluation is a means to several ends:

JUDGMENT
DECISION-MAKING
KNOWLEDGE OF RESULTS
PUBLICITY

* * * * * * * * * * * * * * * *

DEFINITION - 2

EVALUATION FOR DECISION-MAKING

THESIS: A major purpose of evaluation is to provide information for making decisions.

(continued)

POOR ORIGINAL COPY - BEST
AVAILABLE AT TIME FILMED

RATIONALE:

1. Quality education demands continuing efforts to improve education;
2. Educational improvement requires an appropriate balance of enlightened persistance and change;
3. Obtaining and maintaining this delicate balance requires sound decision making;
4. Sound decision-making depends upon an appropriate supply of evaluative information.

* * * * * * * * * * * * * * * * * * *

DEFINITION - 3

DECISION-MAKING IN EDUCATIONAL IMPROVEMENT

PROBLEM: To evaluate for decision-making, the relevant decisions must be known.

POSTULATE: Decisions in educational improvement activities may be classified as:

Planning (focusing needed improvement activities)

Programming (specifying procedure, personnel, facilities, budget, and time requirements for implementing planned activities)

Implementing (directing programed activities)

Recycling (terminating, continuing, evolving, or drastically modifying activities)

* * * * * * * * * * * * * * * * * * *

DEFINITION - 4

KINDS OF EVALUATION FOR DECISION-MAKING

PROPOSITION: Each class of decisions in educational improvement activities requires a relevant kind of evaluation.

Context evaluation is for planning decisions and provides information about "what needs to be done?"
Input evaluation is for programming decisions and provides information about "what can be done?"
Process evaluation is for implementing decisions and provides information about "what is being done?"
Product evaluation is for recycling decisions and provides information about "what has been done?"

DEFINITION - 5

FUNCTIONS IN THE EVALUATION PROCESS

All kinds of evaluation include four functions:

Collection of information

Organization of information

Analysis of information

Reporting of information

* * * * * * * * * * * * * * * *

DEFINITION - 6

CRITERIA FOR ASSESSING THE ADEQUACY OF EVALUATIONS FOR DECISION-MAKING

Validity (Is the information what the decision-maker needs)

Reliability (Is the information reproducible)

Timeliness (Is the information available when the decision-maker needs it?)

Pervasiveness (Does the information reach all decision-makers who need it?)

Credibility (Is the information trusted by the decision-maker and those he must serve?)

* * * * * * * * * * * * * * * * * *

DEFINITION - 7

EVALUATION FOR DECISION-MAKING DEFINED

EVALUATION FOR DECISION-MAKING is the process of:

collecting,
organizing,
analyzing, and
reporting information about
    contexts,
    inputs,
    processes, and
    products for decisions associated with
        planning,
        programming,
        implementing, and
        recycling activities.

STAGES IN THE CIPP EVALUATION MODEL

1. Context Evaluation - defines and analyzes the environment, its unmet needs, and underlying problems.

2. Input Evaluation - identifies and examines available resources, strategies and designs to meet program goals and objectives.

3. Process Evaluation - identifies and monitors the potential sources of failure in a project.

4. Product Evaluation - relates outcomes to objectives and to context, input, and process.

HEW INSTITUTE
ON
EDUCATIONAL RESEARCH INNOVATIONS

University of New Hampshire
Summer 1968

NAME: ______________________ PROPOSAL: ___ Pre; Post ___

POSITION: ______________________ INSTITUTION/AGENCY: ______________

______________________ ______________________

REPORT AND ANALYSIS OF AN EVALUATION STUDY

In your institute application you indicated briefly on a line or two what your current evaluation activities or responsibilities were -- such as "responsible for evaluating Title III programs", etc. We now want to know a good deal more about what you are really doing, the evaluation problems you face, and the ways in which you think about evaluation.

We are asking for this fuller description for several reasons. First, it will give us a much better insight into the range and scope of your evaluation activities, so that we can adapt our institute program in various ways to deal more directly with your problems. Second, we can provide for you, shortly after our opening session, an informative picture of who your fellow participants are, and allow you to initiate communication with other participants who may be facing similar evaluation problems. Third, it may help each of you to clarify some of your thinking about evaluation and your purposes for attending the institute. And finally, it will provide a useful baseline against which both you and we can estimate changes in your thinking and plans which may have been stimulated by your participation in the program.

At the top of each of the following pages there is a question. The rest of the page is blank. Please "fill up" as much of the page as you can with your answer, and continue on the back of the page if you need to! So as to avoid unnecessary duplication, we suggest that you look at all the questions *before* starting to write your answers.

Please complete and return this form as soon as possible. We expect that you will get it to us no later than Wednesday, July 3rd. Those of us on the institute staff regard this project as your first "assignment" and we look forward with great interest to the information and insight which your reply will give us. Also, we hope that it will be a worthwhile and meaningful opening project for you and "gear you" to the intent of the institute.

Finally, please work out this assignment on your own as we'd like to know where you feel you are in the area of research and evaluation. Only then can we attempt to structure the body of the institute and also individualize our contributions to *your* evaluation activities.

POOR ORIGINAL COPY - BEST
AVAILABLE AT TIME FILMED

1. Describe in detail a program you are now evaluating or have some part in evaluating (or a program to be implemented this year). Indicate its nature, content, scope, purposes, etc.

2. What sorts of data (information) are you collecting (have collected or will collect) and how do they relate to the purposes of your evaluation?

3. What problems, difficulties, etc.,(procedural, organizational, or analytical) are you encountering and how are you dealing with them?

4. What sorts of research design(s), statistical techniques, and data processing systems are you utilizing in your evaluation project? What are your available resources for consultation and/or analysis of your data? To what extent have you planned the "flow" of your project to include the dimensions of time, resources, personnel, processing requirements, etc.?

5. What skills, knowledge, or resource information and materials do you now feel you must gain in order to more efficiently and effectively pursue your research effort? How do you now see this institute as a means of constructively providing you with these necessary skills, knowledge, or resource information and materials?

HEW INSTITUTE IN EDUCATIONAL RESEARCH
BUREAU OF EDUCATIONAL RESEARCH AND TESTING SERVICES
P. O. BOX Q
DURHAM, NEW HAMPSHIRE 03824

UNIVERSITY OF NEW HAMPSHIRE
Department of Education

Telephone: 868-5511, x574
or 868-5322

Dear Applicant:

Your interest in the HEW Institute in Researching and Evaluating Outcomes of Educational Innovations in New England is gratefully acknowledged.

A descriptive brochure and application forms are enclosed. Please pay particular attention to the instructions listed below:

1. The following should be sent, in self-addressed envelope provided, to the Director of the Institute.

   a. Application for Admission
   b. Background Data Sheet

   The following should be given to the applicant's immediate supervisor who will complete it and send it to the Director of the Institute.

   a. Confidential Evaluation Form
   b. Self-addressed return envelope

It is important to note that completed applications must be postmarked no later than May 24, 1968. Applications will not be considered complete until all other items have been received.

We shall notify applicants of the decision of the Selection Committee before May 31, 1968. Letters of acceptance from the selected applicants and alternates must be postmarked no later than June 7, 1968.

Please be certain your completed application forms and all accompanying items are postmarked no later than May 24, 1968. You will be hearing from us during the week of May 29, 1968.

All good wishes for success.

Cordially,

Gilbert R Austin
Gilbert R. Austin, Ph.D.
Institute Director

GRA/pm

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION
WASHINGTON, D.C. 20202

CONFIDENTIAL EVALUATION FORM
HEW INSTITUTE IN RESEARCHING AND EVALUATING OUTCOMES OF EDUCATIONAL INNOVATIONS IN NEW ENGLAND

(Name of applicant): ______________________________

Name of sponsoring institution: University of New Hampshire

I am seeking admission to the HEW Institute in Researching and Evaluating Outcomes of Educational Innovations in New England.

The Selection Committee for the Institute named above has requested that I forward this Confidential Evaluation Form to my principal, department chairman, or immediate supervisor. Please complete the form and return it to the Institute Director.

---

1. Name of evaluator:

Title of position:

School (or system):

2. How long have you known the applicant and in what capacity?

---

3. Considering all the teachers (or specialists) you have worked with or supervised, how would you rank the applicant on the following characteristics?

	Excellent	Above Average	Average	Below Average	Poor	Can't Judge
a. Ability as a teacher (or specialist)						
b. Knowledge of subject matter						
c. Effectiveness in working with students						
d. Effectiveness in working with colleagues						
e. Leadership potential						
f. Scholastic ability; capacity for growth						

4. Please provide any comments on the applicant's ability, performance, character, temperment etc., which you believe will aid the Selection Committee in determing his or her suitability for this Institute.

---

5. In what ways do you believe that the applicant would benefit from attending this Institute? (If the applicant has specific areas of need, please indicate them.)

---

6. Does the applicant have a contract, or the offer of a contract, in your school or school system for next year?

___Yes ___No ___I don't know (If not, please explain.)

---

7. Please comment on ways in which your school or school system may utilize or benefit from the training received by the applicant if he or she is selected for the Institute.

---

8. Signature of evaluator: Date:

POOR ORIGINAL COPY - BEST

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION
WASHINGTON, D.C. 20202

APPLICATION FOR ADMISSION TO AN HEW INSTITUTE IN RESEARCHING AND EVALUATING OUTCOMES OF EDUCATIONAL INNOVATIONS IN NEW ENGLAND

Type or print in block letters your answers to this form, and other forms supplied by the institution to which you apply, to the Institute or Program Director, NOT to the U.S. Office of Education.

1. Your name (Title, first, middle initial, last):

4. Sex:
__Male
__Female

5. Age: __Yrs.

7. U.S. Citizen:
__Yes
__No

2. Home address (Number, street, city, state, ZIP code):

5. Number of dependents (excluding yourself) who are claimable for Federal income tax purposes: (If you file a joint return and are NOT the major earner you may not claim any dependents.)
____

3. Home telephone:

Area Code: ______

Phone: ________________

Institution:

University of New Hampshire

6. Your present employment (check one):

__I am employed in a school,system or college and/or I am employed by Title I or Title III.(Complete the remaining items on this form)

__I am NOT employed in a school,system or college. Omit items 11 through 18 and specify your employment here.
____

7. Name and address of school:

12. Name, title, and address of your immediate supervisor:

8. School telephone:

Area Code:____ Phone:______________

13. Title of your position:

9. Level of school (or system):
__Pre-School __Elementary
__Junior High __Senior High
__Jr.-Sr. High __Elementary & Secondary
__Junior College __Technical Institute
__College or University

14. If you are preparing for employment at a different school or level, or for a different assignment, specify here:

10. Type of school (or system):
__Public __Private, Church Related
__Private, not Church Related

11. Number of students enrolled (if you serve a single school):

15. List your present schedule of courses taught, professional assignments, etc.

16. Summarize your years of experience in teaching or related work:

Subjects or assignments	Level (Elem., Secondary, Etc.)	Years of Experience

17. Employment Record -- List your places of employment in teaching or related work during the last five years.

Dates	Name and Address of Employer	Nature of your Work

18. What Colleges and Universities have you attended?

Name of Institution	Dates Attended	Degree	Major	Minor(s)

19. Describe any other significant academic experiences you have had in the subject field of this institute or program (such as summer programs, workshops, or seminars)

20. What teaching certificates or other credentials do you hold? (Indicate type, level, subjects, etc.)

21. Are you applying for Institutes or Fellowships in addition to this one?

____Yes   _____No (If yes, specify them)

22. I certify that the statements made by me in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Date:

Signature of applicant:

HEW INSTITUTE IN EDUCATIONAL RESEARCH
University of New Hampshire

BACKGROUND DATA SHEET

Name____
(last) (first) (middle)

Position____

List all undergraduate and graduate courses in Evaluation and Measurement.

Course Title	Institution	Date	Credits	Level (Graduate or Under graduate)

Will you pursue the Institute for Credit?__________Are you a degree candidate at the present time?________ Institution______________________________ Degree______________

List professional organizations in which you hold membership.

____

____

Applicant's signature______________________________

Date______________________

On the reverse side of this sheet please describe your professional aspirations and indicate how this Institute might assist you to realize these goals.

BUREAU OF EDUCATIONAL RESEARCH AND TESTING SERVICES
P. O. BOX Q
DURHAM, NEW HAMPSHIRE 03824

UNIVERSITY OF NEW HAMPSHIRE
Department of Education

Telephone: 868-5511, x574
or 868-5322

TO: Participants

FROM: Dr. Gilbert R. Austin, Director

DATE: May, 1968

RE: Campus Housing

As you will recall, all participants are required to avail themselves of University housing facilities. A few single rooms are available and will be assigned in the order requests are received. When these rooms are no longer available, the participant may choose to take a double room as a single. If it is necessary to assign two persons to a room, we shall utilize information you provide us on the accompanying data sheet to try to achieve compatibility.

* *

Participant"s Name____

Housing and Food Service: Prices quoted below are the totals for six weeks.

Single room and 15 meals per week @ 182.00________
20 meals per week @ 215.00________

Double room and 15 meals per week @ 164.00=________
20 meals per week @ 197.00________

Double room serving as a single and 15 meals per week @ 203.00_______
20 meals per week @ 236.00_______

BUREAU OF EDUCATIONAL RESEARCH AND TESTING SERVICES
P. O. BOX Q
DURHAM, NEW HAMPSHIRE 03824

UNIVERSITY OF NEW HAMPSHIRE
Department of Education

Telephone: 868-5511, x574
or 868-5322

May 1968

MEMORANDUM

TO: HEW Institute Applicants

FROM: Gilbert R. Austin, Director

It is my pleasure to inform you that you have been accepted as an alternate in the HEW Institute in Researching and Evaluating Outcomes of Educational Innovations in New England. If a selected participant declines the invitation to attend the institute, an alternate will be named to take his place. If you wish to be considered eligible as an alternate the following must be mailed and postmarked no later than June 7th.

Letter of acceptance
Housing form

We shall inform you of your status by the 14th of June.

We are most grateful for your interest and cooperation.

BUREAU OF EDUCATIONAL RESEARCH AND TESTING SERVICES
P. O. BOX Q
DURHAM, NEW HAMPSHIRE 03824

UNIVERSITY OF NEW HAMPSHIRE
Department of Education

Telephone: 868-5511, x574
or 868-5322

June 1968

MEMORANDUM

TO: HEW Institute Applicants

FROM: Gilbert R. Austin, Director

It has been a most difficult task to select 30 candidates for the HEW Institute on Researching and Evaluating Outcomes of Educational Innovations in New England. It is unfortunate that many highly qualified applicants must be disappointed. I regret to inform you that it will not be possible to invite you to participate in this Institute.

We thank you sincerely for your kind cooperation in completing application forms and in sending the necessary materials to us. Your interest in devoting a summer to professional growth is indeed commendable, and we hope it will be possible for us to serve you at a future date.